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ABSTRACT

This is the second of a series of three volumes containing papers from a bilingual symposium held in 1975. Presentations and discussion at the symposium dealt primarily with suggestions for research which linguists should undertake to assist bilingual programs. This volume contains the following papers: "A Survey of Research in Syntax," by Arnold M. Zwicky and Robert M. Kantor; a response to Zwicky and Kantor's paper by Gustavo Gonzales; "Semantics," by John M. Lawler; "Pragmatics," by Charles Pyle; and comments on Pyle's paper by Lily Wong Fillmore. (CLK)

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Vol II

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# Final Report of the Bilingual Symposium:

## Building a Research Agenda

Vol. II

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# A Survey of Research in Syntax*

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## A. General introduction

In the following pages we survey, in a rapid-fire (and somewhat scattershot) way, the major results and current research topics in the field of syntax, with an eye to those that might be of relevance to bilingual-bicultural education. We have deliberately chosen to think about 'relevance' in a very broad way, as we explain in section B2a below. It is also true that we come to the topic of bilingual-bicultural education as theoreticians exploring new territory, rather than as practitioners; we have no experience in bilingual education. Instead, we hope that our approach will help readers to see familiar topics from a new direction or in a fresh light and to think about some unfamiliar topics that could, perhaps indirectly, be of use to bilingual education.

Our readers deserve an apology. The more theoretically minded of them will think that much of this paper is old stuff, and in the sampling of the literature we give they will miss many important and fascinating items. The more practically minded of them will wonder how these things can be applied in the classroom, and in the sampling of the literature we give they will miss most of the technical literature on bilingual-bicultural education. We ask the forbearance and patience of both groups as we thread our way through the enormous technical literature of syntax with an eye towards bilingualism in the classroom.

## B. The field of syntax

### 1. What syntax is about

a. Basics. The field of syntax, in its broadest sense, concerns the ways in which meaningful elements are combined in language. All languages associate sounds with meanings in units that have characteristic uses (by particular people in particular situations). There are branches of linguistics that treat each of these aspects of language--phonology, the study of the way sounds are used in languages; semantics, the study of the meanings conveyed by these sounds; and pragmatics, the study of the uses of specific sound-meaning combinations.

But it would be wrong to see a language as a sort of gigantic list of stretches of sound, each conveying a specific meaning and appropriate for use in certain situations. Such a 'language' would be far too inflexible for the wide variety of things that people want to do by speaking: it would be enormously burdensome to produce and perceive, since speaking it and understanding it would require memorizing vast numbers of long stretches of sound, with their accompanying meanings and uses; and it would lack the creativity that characterizes real languages, the ability of speakers to concoct new stretches of sound appropriate to situations, and of listeners to understand these novel bits of speaking. In fact, languages are organized into units at several levels, and this organization is open-ended at each level, open-ended in the sense that combinations of units are formed according to general principles rather than being treated as wholes, so that new combinations can be made and understood. For instance, there are general principles of word formation in English that allow us to form, and understand, the plural of a word even when we've had no previous experience with this plural. I can talk about persimmons, and you will understand me, even if our previous experience with the English language happens not to have involved the word persimmons; it is enough that we know the word persimmon and the general principles for making plurals.

b. Levels of structure. It is customary to see three major levels of organization of meaningful units in languages. We begin with the smallest meaningful units, for which English has no ordinary word; the technical term morpheme has been invented to refer to bits like the un, happy, ness, and es in the word unhappinesses. Morphemes combine to form words, according to principles peculiar to each language. Only certain combinations are possible--happy can be joined with ness but not with es--and even then they must be combined in a specific order--happiness, not *nesshappy.[1] Finally, the principles of combination often refer to whole classes of morphemes, rather than to specific morphemes: once you know that straightforward is an adjective meaning so-and-so you can form, and understand, the noun straightforwardness. The general principle concerning words with ness in English can be summarized (leaving out a few details) in a formula,

Adjective + ness = Noun

The principles of word structure, taken together, are known technically as the morphology of a language. This is the first of the three major levels of organization. The second is syntax proper, the organization of words into larger units, sentences. Again, only certain combinations are possible--Weeds flourished, but not *Weeds of--and even when a combination is possible, it must usually be made in a certain order--_Weeds flourished_, not *_Flourished weeds_. Again, the principles of combination often refer to classes of words rather than to specific words; once you know that _cinquefoils_ is a noun meaning so-and-so and that _thrived_ is a verb meaning so-and-so, then you can form, and understand, the sentence _Cinquefoils thrived_.[2]

Finally, sentences can be assembled into still larger units, _discourses_, again according to general principles. For instance, _Once upon a time there was a very happy king_ is a possible way to begin a certain type of discourse in English, but not to end one, and this sentence could be followed by _He ruled with a firm hand_ but not by _She ruled with a firm hand_. The principles of organization at this level are known as the _discourse structure_ of the language. Discourse structure, like morphology and syntax, shows restrictions on combination, restrictions on order, and reference to general classes of units.

Although the three levels of organization seem in many ways to be governed by general principles of three distinct types, there are many important interrelationships and parallels between levels. For instance, the same or similar meaning may be expressed either morphologically or syntactically: _likelier_ but _more likely_, _visited_ but _used to visit_, _Roger's_ but _of Roger_. The same or similar meaning may be expressed by a sentence or by a _sentence fragment_: _What did you see? (I saw) a dog with a pink bow around its neck_. And the same or similar meaning may be expressed in one sentence or several: _Arriving home, we noticed a peculiar smell_ but _We arrived home. We noticed a smell. It was peculiar_. A parallel between levels can be seen in the fact that morphological classes typically play a rôle at all three levels; thus, the Noun-Verb-Adjective-Adverb distinction in English will be referred to in the principles that have to do with morphology, syntax, and discourse structure. Because of such interrelationships and parallels, our discussion below touches on all three areas, though the focus is on syntax proper.

c. Syntactic research. Linguists approach the field of syntax in a number of different ways. We distinguish here three major lines of approach, the first two of which are of special interest to bilingual education:

i. Analysis of specific languages or language varieties. Much effort goes toward the description of the syntax of English, of French, of Mandarin, of Navajo, etc., the aim being to unearth the general principles at work in each language, to provide a detailed account of the way the language works, and to do this elegantly and insightfully. These studies may concern a regional or social variety other than the literary standard (if there is a literary standard), and they may concern informal rather than formal styles; each variety and style has a system of its own. Very often language-specific studies suggest hypotheses about linguistic universals (see ii below) or theoretical proposals (see iii below), and very often the direction of work in a specific language variety is suggested by crosslinguistic studies or by theoretical hypotheses.

ii. Crosslinguistic studies. Another very fruitful line of research compares parallel structures in a wide variety of languages, with the goals of establishing linguistic universals (propositions that are true for all languages) and of discovering useful typologies (groupings of languages into a few types or classes on the basis of salient features (see section C1 below)). For instance, the systems of personal pronouns may be compared, or the ways of asking questions, or the ordering of verb, subject, and direct object. Almost invariably it turns out that the systems that occur are not all the logically possible ones, and such limitations lead investigators to propose universals and typologies. These hypotheses in turn motivate a search for confirmation and counterexamples in new languages and suggest revisions of theory.

iii. Theory construction. Theoretical studies in linguistics are aimed at specifying, precisely and in detail, what the form of language is and at explaining, insofar as this is possible, why language should have the form it does. Syntactic theory provides terminology and formalism for the description of syntactic structure, together with many hypotheses about the sorts of syntactic structures that are possible. Our interest in theory here comes from the fact that theoretical proposals may suggest unexpected connections between different aspects of a language or between aspects of different languages. Indeed, the theoretical framework he uses guides an investigator towards certain phenomena (and away from others).

2. Relevance to bilingual education. There are various ways in which more theoretical or 'abstract' studies can have relevance to more practical or 'applied' matters; possible applications sometimes directly motivate certain lines of research, while other times applications spring indirectly, even in totally unexpected ways, from research carried on for other ends or simply for its own sake. In

the area we are looking at in this paper, the relevance of syntactic research to bilingual education, it is easy to see that some sorts of research have fairly direct relevance, while others can be applied only indirectly. A study of the syntax of a local variety of a language might be used fairly directly by someone planning classroom materials in that variety, for instance. On the other hand, research on the general nature of syntactic variation can reasonably be expected to have only more indirect use--perhaps an unanticipated insight into some aspect of variation in the classroom, perhaps results that can be used to increase the sensitivity of those involved in bilingual-bicultural education to linguistic factors in the situation. This last type of indirect application is, we feel, more significant than it might sound, since nonspecialists usually seriously underestimate both the complexity of language structure and its regularity; these attitudes towards language itself can confound practical problem solving and even mask the existence of genuine problems.

It is also true that there is no such thing as relevance in the abstract: what is relevant is relevant to someone, for some purpose. In looking at bilingual education, we see at least seven groups with differing potential interests in the fruits of linguistic research: (a) the parents of the children concerned; (b) teachers (other than language teachers) and teacher aides in a bilingual-bicultural setting; (c) teachers of a language as a subject; (d) planners of curricula; (e) designers of classroom materials; (f) testers and evaluators; (g) teachers of those in groups (b) and (c) above. We have not tried systematically to label our comments as being of special interest to one or more of these groups, though we have given some suggestions.

With these preliminaries out of the way, we turn now to a general statement about some ways syntactic research might be relevant to bilingual education; the final section (D) of this paper has a much more specific discussion.

a. Language influence. The main relevance of syntactic research to bilingual education is in the analysis of the influence of the child's first language on the second language, and of the second on the first. This influence can range from extensive but essentially innocuous borrowings (individual words phonologically adapted, translations of idiomatic phrases) all the way to the total overwhelming of one languge by another. We are concerned here with the sorts of intermediate degrees of influence that can be expected in a bilingual setting. The most obvious of these is _interference_, the carrying over of patterns from one language into another--as when a Spanish-English bilingual says _Aquí están unos trapos_ 'Here there are some rags', (with _estar_ 'to be'), instead of the correct _Aquí hay unos trapos_ (with _haber_ 'to have'), presumably because of the English pattern with _be_ rather than _have_ (Cohen 1975:191); or says _Another one is sitting in the wall_ instead of the correct _on the wall_, presumably because Spanish _en_ corresponds in English to both _in_ and _on_ (Cohen 1975:200-1).

A more complex form of influence between languages is _simplification_, in which contact between languages results in a system that is simpler than either of the contributing languages. Lehiste 1965:66-8 examines a very striking case of syntactic simplification: contact between Estonian, with 28 distinct forms for every noun, and Baltic German, with eight distinct forms for every noun, resulted in some speakers' having only two distinct noun forms in their 'mixed' variety.

Notice that it could sometimes be hard to tell the difference between interference and simplification--this will be so when interference would naturally reduce a system, as when English, with its two forms for each noun, interferes with a language like German or Russian, with more--so that the extent of simplification in situations where bilingualism is or is being established could easily be underestimated.

In addition, Cohen 1975: ch. 8 points out that interference must be distinguished from at least two other sorts of derivations from 'school' grammar: deviations due to *child language* and those due to *nonstandard dialect*. To this list we must add *hypercorrect* forms (like Cohen's example *The cat are going to stay*, with incorrect *are* presumably brought about through an 'overshoot' in an effort, conscious or unconscious, to use *are* in the right places) and genuine speech errors, of the sort that even competent adult monolinguals make from time to time (as in *Take off your chair and pull up a coat*, with *chair* and *coat* reversed).

Finally, sometimes learners of a (first or second) language will simply (and often unconsciously) *avoid* troublesome words or constructions. Thus speakers of French or Italian might avoid using *actual* in English, because French *actuel* and Italian *attuale* mean 'current, recent' rather than 'real, true'. Indeed, avoidance may well be an important factor in syntactic simplification: learners will avoid more complex constructions, in which they are likely to sound inept and 'foreign', in favor of simpler, safer constructions (so learners of English tend to avoid relative clause constructions in favor of conjunction with and: instead of I noticed a book that I wanted to buy, the syntactically simpler I noticed a book, and I wanted to buy it).

One goal of bilingual education is that the child should end up with two coexistent systems not influencing one another. However, interference and simplification, and perhaps avoidance (in both $L_1$ and $L_2$) are inevitable. We would like to be able (a) to predict the nature of this influence, given the structures of the two languages involved and the strategies used by children in second language learning, both before and after the 'critical age'; (b) to assess the significance of specific instances of influence--How much do they retard communication? Will they pass away spontaneously in a short time? Are there strong attitudes towards some of these aspects of $L_1$ and $L_2$?--and (c) to determine whether particular bits of influence can be alleviated by direct or indirect help from a teacher, and if so, what the best strategy for help would be. Syntactic research bears especially on points (a) and (c).

There is a substantial literature on the subject of interference in second-language learning (including English as a Second Language), based on contrastive analysis (Lado 1957) and, more recently, error analysis (Dulay and Burt 1972, Burt and Kiparsky 1972). But much remains to be done, especially with reference to language learning in the relatively natural setting of bilingual education. It seems to us that this research is important regardless of whether a direct method or native language approach (Engle 1975) is used to establish bilingual competence in reading and writing.

b. Styles and varieties of language. It is important that teachers involved in bilingual education--not just language teachers, but classroom teachers in general--should appreciate the complexity of the language learning task confronting their students: the $L_2$ spoken by their peers will be an informal style, probably of a regional and social variety different from the literary standard, but the $L_2$ they are expected to read and write will probably be a formal style of a variety approaching the literary standard. The children are then faced with a double task--learning to speak and understand one version of $L_2$, but learning to read and write another. If the children are being taught by the native language approach, they have a triple task--learning to read and write 'standard' $L_1$, learning to speak and understand 'colloquial' $L_2$, and learning to read and write 'standard' $L_2$. As a purely practical matter, it might be sensible at first to cut down on the number of different tasks imposed on the children, through the use of colloquial materials in both $L_1$ and $L_2$, and through forbearance on the part of the teacher towards the use of colloquial $L_2$ in the classroom.

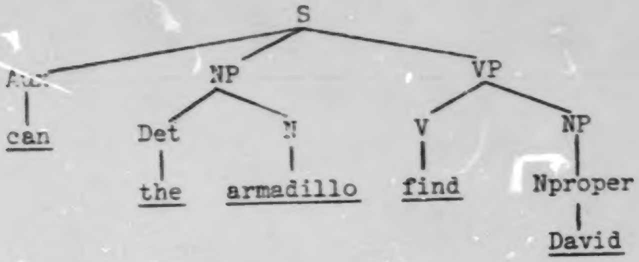
Studies of interference phenomena will need to work with descriptions of the styles and varieties actually used, not of an abstract standard that the child has little or no contact with. Although the syntax of various regional and social varieties of English, and some other languages, has been described in some detail, many varieties have scarcely been touched. In addition, the study of the syntax of informal styles$^3$ has barely begun (see Silva and Zwicky 1975 for some examples). Both areas are relevant to bilingual education and need further study.

C. General implications of theoretically oriented work. It is obviously of advantage to someone who would study learning of some sort to understand the nature of the thing being learned. And different conceptions of the thing being learned lead to quite different conceptions of the learning process and of the most effective teaching strategies.

In the case of syntax, it was believed for many years that an adequate description of the syntactic structure of a language would be a list of all the types of phrases in the language. For English such a list might include principles like the following:

(i) NP + Aux + VP = S (declarative pattern)
(ii) Aux + NP + VP = S (pattern for yes-no questions)
(iii) VP = S (imperative pattern)
(iv) V + NP = VP (transitive verbs)
(v) V = VP (intransitive verbs)
(vi) *be* + NP = VP (predicate nominals)
(vii) *be* + AP = VP (predicate adjectives)
(viii) Det + N = NP (phrases like *the armadillo*)
(ix) Pro = NP (pronouns)
(x) Nproper = NP (proper nouns)

A sentence like *Can the Armadillo find David?* would be seen as involving principles (ii), (iv), (viii), and (x), and its *phrase structure* could be displayed in the diagram



The associated view of the learning of syntax is that it is largely a matter of learning the patterns expressed by principles like (i)-(x). Second-language texts based on this theoretical framework focused on differences in the patterns displayed by different languages.

However, theoretical studies during the last 20 years indicate that this basic framework is inadequate and that a much more complex approach is required. First, the syntactic description of a language should be transformational, in the sense of Chomsky 1957: it will assume that certain phrase structures are basic and that the others are derived from these by a series of transformations, operations that insert material, delete elements, or rearrange the existing phrases. In the example above, the phrase structure for *Can the armadillo find David?* will be derived from a structure much like the one for *The armadillo can find David*, by a rule that interchanges the subject NP (*the armadillo*, in this example) and the Aux (*can*, in this example).

Second, there should be a tightly constrained theory about what sorts of phrase structures and transformations languages can have. Such a theory should incorporate findings on linguistic universals and typologies. For instance, the theory should incorporate the observation that while it is possible for a language to form yes-no questions by means of a transformation interchanging the subject NP and the Aux (as in English), it is not possible for a language to form yes-no questions by interchanging the subject NP and the direct object NP.

Third, systematic variation--for instance, systematic differences between the syntax of formal and informal styles--should be understood as part of the structure of the language, to be described in as much detail and with as great generality as any other aspect. For instance, the fact that sentences with missing initial elements, like You want to go? or Want to go? for Do you want to go? are informal in style can be described by a deletion transformation conditioned in part by stylistic level as well as by the syntactic categories of the elements involved.

These three changes in framework alter utterly the way language learning is seen, and future advances in theoretical matters will doubtless have the same impact on practical enterprises. As a result, even theoretical work of a highly abstract variety must be seen as possibly relevant to activities like bilingual education.

## C. Current research in syntax of interest to bilingual education

### 1. Typology and universals

a. Typology. Languages are often grouped according to shared features; such a grouping is called a typology. Typologies usually divide languages of the world into only a few major groups. The concern here for bilingual-bicultural education is: Will a language learner, speaking a language of one typological class, have more difficulty crossing over to a language of another class than to one of the same class? And if so, what kinds of trouble?

One often discussed typological classification is that of the order of major sentence constituents--subject (S), verb(V), and direct object (O). Greenberg 1963b notes that the vast majority of languages have a dominant word order SVO, SOV, or VSO. Based on these order types there are a number of universal implications, among them: 'Languages with dominant VSO order are always prepositional...With overwhelmingly greater than chance frequency, languages with normal SOV order are postpositional' (Greenberg 1963b:61).

Vennemann 1974:366 states Hoenigswald's suggestion that sentence accent patterns characteristically differ according to whether the language is a verb-final (SOV) language or not. This difference is in fact a completely opposite assignment of stress, primary-secondary (as in English White House) in languages that are consistently verb-final, and secondary-primary (as in English white house) for languages that are consistently verb-nonfinal. According to Vennemann, this difference causes 'a major difficulty in learning a language of the opposite type of one's native language...' (366). It is certainly worthy of more investigation.

Lehmann 1973 also works with a word order typology. He finds that both the placement of function words like articles, prepositions, and conjunctions, and also the type of morphology that a language has[4] are related to word order type. In addition, he makes predictions about syntactic change (section 7 below).

This is just a sampling of some of the work in language typology.

The next section, universals of language, also surveys some of the work in the field. Neither of these subsections is meant to be an exhaustive characterization of current work.

b. Universals of language. Typologies, such as the word order typology discussed above, are typically underlain by language universals, properties of language which are realized in all languages of the world. Thus, the word order typology can be established because all languages have subjects, objects, and verbs. Similarly, we can say that it is a universal that all languages have nouns. While this universal is obvious to anyone who has studied languages, some useful applications follow from it. For example, from this statement we may proceed to study contrastively the noun systems of languages of the world to see what more we can say about them. This statement also allows us to exploit a speaker's (largely unconscious) knowledge of his noun system, to bring it to consciousness, and to contrast it with the noun system in another language.

Linguists have only begun to discover the many language universals which surely exist, but some results are already potentially useful to bilingual education. We present below some morphological and syntactic phenomena that are known to be universal, with comments about how they might be applied to bilingual education and with some relevant source material.[5] Again, this is only a small sample.

i. Propositional types. An almost uncontroversial universal is that all languages have propositional types expressing certain meanings, for example:

(a) equational: Percy is a policeman.

(b) existential: There was once a king.

(c) transactional: Helen gave the pencil to Irene.

and many more. Each language has its own syntactic means of expressing these propositional types, and an inventory of these types and their syntactic realizations in each language would be useful for predicting interference problems and for organizing units of study.

Literature: An excellent source for work on propositional types is the Stanford Working Papers on Language Universals. Among the useful surveys there are Clark 1970, discussing universals of and relationships between existential, locative and possessive constructions; Blansitt 1973 on transactional clauses; and Bhat 1975 on the syntactic distinctions between existential and equational sentences. Dowty 1972 presents an enlightening view of the difference between verbs describing activities and those describing states.

ii. Sentence types. It is also an unrestricted universal that all languages have sentence types, distinct syntactic constructions expressing characteristic uses of sentences. Probably all languages distinguish at least three sentence types:

(a) declarative: Penguins cannot fly.

(b) interrogative: Can penguins fly?
Which birds cannot fly?

(c) imperative: Fly away, you penguins!

though a careful analysis of any language would probably unearth a great many more, like the suggestion type (Let's go fishing, Why not have another fish cake?) and the exclamation type (How tall you've gotten! What a triumph that was!) in English. For any given sentence use (requesting, informing, commanding, suggesting, etc.) the range of sentence types seen in languages is quite small; there are only a handful of ways to ask yes-no questions, for instance, a fact that could easily be exploited in language teaching in a bilingual setting.

Literature: published studies include Moravcsik 1971b on yes-no questions, Elliott 1971 on exclamatory sentences, and Pope 1973 on answers to questions.

iii. Nouns and noun modifiers. All languages have nouns. However, the syntactic and semantic categories associated with nouns and the types of modifiers (and their syntactic realizations) associated with nouns can again differ greatly from language to language. Categories like case, number, and gender may be totally absent in a language or may be present to varying degrees. Students whose languages lack the categories of English will be particularly prone to under-differentiating those English categories; for instance, a student whose language does not have an overt marker for the plural will frequently fail to add the s to English nouns.

Types of noun modifiers will also differ. Considerable time will have to be spent teaching the different uses of the English definite and indefinite articles to students whose native language has none.

On the other hand, any similarities between languages should be exploited. We expect languages to show adjectival modifications, numerals, genitive (possessive) relationships, etc. Many of these syntactic realizations are well described in the literature and should be useful to language teachers, curriculum planners, and materials designers.

Literature: Moravcsik 1969 treats the realization of the notion of definiteness, showing how this notion is treated in some languages by word order and in others by such noun modifiers as articles (and in some languages by tone!). Ultan 1970 presents a typology of possessive constructions. Moravcsik 1971a characterizes agreement features and treats in particular gender, number, person and definiteness. Greenberg 1972 treats the problem of numerical classifiers.

iv. Function words. Languages differ greatly in their inventories of the 'minor' or function word categories, e.g. whether or not they have prepositions, postpositions, articles, classifiers, intensifiers, copulas, verb auxiliaries, negation markers, coordinating conjunctions. Also, meanings associated with function word categories in one language may be associated with 'major' or content word categories in another: in some languages, meanings like 'with', and 'for', and even 'not' and 'and', can be expressed by words with the syntactic properties of verbs. Function words in English (as well as all other languages) are very frequent in speech and writing, and their improper use immediately sets off a speaker as foreign or uneducated. Their distribution and use crosslinguistically varies greatly, and syntactic research into and documentation of their various uses could provide much useful material for curriculum development and materials design.

v. Relationship of nouns to verbs. The way nouns are related to verbs--as subjects, direct objects, indirect objects, etc.--differs greatly from language to language, and even within a language from verb to verb. These differences in case systems can be a major source of interference. Contrastive and error analyses will be very important here.

Literature: Fillmore 1968 presents an analysis of the syntactic reflexes of a semantic notion of case, an analysis which has served as a model for many language descriptions. Traditional grammars of individual languages typically contain sections on the various uses of grammatical case. Lees 1970 shows for English how noun-noun compounds (section 2fii below) systematically reflect the relationships of nouns to verbs.

vi. Complements: a case of relationship between syntax and semantics. We saw in subsection i above that each language has its own syntactic means of expressing certain propositional types. Similarly, languages have different ways of expressing relations between propositions, or modifications of propositions.

We find, for example, that verbs fall into many semantic classes which constrain syntactic operations; these classifications have to do with the complements (clauses acting as subject or object) of the verbs. Thus, verbs have been semantically classified by Kiparsky and Kiparsky 1970 as being factive, those whose complements are presumed to be true, for instance realize in

(1) Lisa realizes that ostriches cannot fly.

or nonfactive, the complements of which are not presumed true, for instance hint in

(2) Leroy hinted that New York was about to default.

Hooper 1975 finds that these factive and nonfactive verbs are cross-cut semantically by another semantic distinction, assertive versus nonassertive. Assertive verbs like hint or realize imply in one manner or another that the speaker or the subject of the sentence has an affirmative opinion regarding the truth value of the complement (as in (1) and (2) above), while nonassertive verbs merely comment or or deny this truth value: be likely (nonfactive) and regret (factive) in (3) and (4) are nonassertive:

(3) It is likely that Harry has thrown out the leftover squid soufflé.

(4) I regret that your monkey has caught cold.

These semantic distinctions turn out to have syntactic reflexes. Thus we find that a nonassertive factive may contain a the fact that phrase while an assertive factive may not:

(5) Bill regretted the fact that Sue had won the Pulitzer Prize.

(6) *Bill realized the fact that Sue had won the Pulitzer Prize.

Assertive verbs can have their objects preposed (moved to the front of the sentence), whereas nonassertive verbs cannot:

(7) Mary is lost, Bill hinted.

(8) *Mary is lost, it's unlikely.

(9) Mary was lost, John realized.

(10) *Mary was lost, John regretted.

These are just two semantic distinctions with syntactic correlates. We believe that these classes (and others) are universal and can certainly be brought to consciousness in the language learner and used to make language learning seem less random and idiosyncratic.

Literature: A wealth of information on the syntax of subordinate clauses in many languages is contained in Corum et al. 1973. Zwicky

1974 surveys work done on direct and indirect discourse, syntactic realizations of which may differ quite dramatically.

viii. Adverbial connectives. All languages have syntactic devices for relating two propositions with respect to

(a) time, precedence, simultaneity: After/Before/When John left, Sue showed up.

(b) concession: Although John's not here I think you can go ahead without his signature.

(c) reason: I did it because I wanted to.

(d) purpose: I'm doing this now so that I can leave later.

and more. All languages will express these relationships syntactically, but in different manners.

Literature: Quirk et al. 1972 present a very nice breakdown of English adverbial connectives, as well as most of the major syntactic constructions in English. Geis 1970 provides syntactic analyses of English time adverbial clauses, and Geis 1973 gives analyses of if and unless clauses. Rutherford 1970 distinguishes two types of reason clauses, those modifying the speech act, as in Dory's here, because I can hear him, and those that are part of the main proposition, as in Dory's here because he wants to be here. Speech act concessives, as in I hate to bother you, but your zipper is open, are analyzed by Baker 1975 and Kantor ms. 1975.

viii. And lots more. These are not the only universals of syntax that linguists have studied. In fact, each of the preceding subsections could have been written using examples from almost any language of the world. There turn out to be very few language-particular phenomena if one probes deeply enough.

2. Functional considerations.[6]

a. Functions in language. In section B1a above, we argued that a 'language' that associated stretches of sound directly to meanings would be too inflexible for use in human activities and that this functional consideration explained the multi-level organization of languages. In particular, we mentioned that the burden on perception and production was lightened by the existence of meaningful units smaller than a whole discourse--sentences, words, and morphemes. Now we may add that the organization of sentences into phrases of various sizes can be seen as motivated in the same way; these are meaningful units intermediate in size between the word and the sentence.

The need for processable 'chunks' of various sizes explains why there are meaningful units smaller than a whole discourse, but it does not, of course, explain why languages have these particular units. If we ask now why languages have transformations, we can again reply with functional arguments--and again, these will explain why transformations of various sorts exist, but not why languages have the particular transformations they do. That is, functional considerations motivate many universal properties of language but do not seem, in general, to explain them all in detail. Thus, McNeill 1966:62, examining children's acquisition of negation in English, hypothesizes that the development of transformational rules for the placement of the negative comes about because

> The child needs to process sentences in short intervals of time; presumably it takes less time and a child tends to forget less when the placement of the negative is done by transformational rules rather than by independent [phrase structure] rules.

but must appeal to specific linguistic universals to explain why the acquisitional sequence takes the shape it does.

With this caution, we now turn to six ends served by transformations: the marking of sentence types, the marking of relationships in discourse, pronounceability, perceptibility, brevity, and variety. It should be remembered that these functions of transformations are unrestricted universals of language. That is, we expect all languages have these same functional needs, which are satisfied by language-particular transformations and conditions on transformations.

b. Marking of sentence types. Every language must provide some systematic indication of sentence use. This may be done by characteristic pitch patterns associated with particular uses, like the rising final pitch of the questions *You're going now*? and *Are you going now*?; by special morphemes or words associated with particular uses, like *how come* indicating a question and *let's* indicating a suggestion; by deletion transformations, as in the 'test question' *The discoverer of the mudpack treatment for arthritis was...*? and in the imperative *Get me a beer*!; by transformations changing word order, as in the yes-no questions *Will the penguin bite me*? and the 'wh-question' *Who will the penguin bite*?; by transformations copying parts of sentences, as in the 'tag question' *You're happy, aren't you*? and the 'tag request' *Give me a metric wrench, would you*?; or by combinations of several of these devices, as in several of the examples already given.

In addition to these *direct* indications of sentence use, every language has a number of conventionalized *indirect* forms, like the English *Do you have any roasting chickens*?, which has the form of a question but is conventionally used as a request for a shopkeeper to get roasting chickens for you (if he has any). We return to these indirect forms in sections 4 and 5 below. Here we should remark that they can fairly be called 'speech act idioms' (Sadock 1972)--entire sentences whose use in speech is different from the use normal for their sentence type--and like other idioms (section f below), they normally do not translate into another language. So just as *by and large* cannot be translated into **por y grande* in Spanish, **par et grand* in French, or **von und gross* in German, so *Do you have any roasting chickens?* will apparently not work with Hebrew-speaking storekeepers, and none of the following (from Sadock 1974:93) counts as a normal request to open the door in English, though each does in the original language:

Swedish: Tänk om Ni skulle opna dörren.

'Think whether you should open the door.'

Hebrew: atá muxán liftoáx et hadélet?

'Are you ready to open the door?'

Greenlandic Eskimo: matumik angmarniarit.

'May you try to open the door!'

In such idioms we have a rich source of bilingual misunderstanding.

c. Marking of discourse relationships. A sentence in a discourse must, obviously, have (semantic and pragmatic) relevance to what preceded it. But we find also that sentences in context are syntactically constrained. For example, it is often said that active and passive sentences have the same meaning, yet in a discourse context one form may be clearly preferable to the other,[7] as in the example

Bill was touring Columbus. *The whole city was seen by him in a day.

Here the passive sentence sounds somewhat odd. On the other hand, a passive sentence is impeccable in a context like the following:

> Guess what happened to Jim. He was just given the Congressional Medal of Dishonor by a group of anti-war activists.

Why should a passive sentence be preferable in one context and not in another? Many linguists (Firbas 1971, Kuno 1972, Kantor 1975, Hinds 1975) maintain that sentences and sentence elements have *communicative functions*. These communicative functions of linguistic elements and structures are only now beginning to be studied.

Firbas 1971 believes that all languages have mechanisms whereby information which is old to the discourse or known to the hearer will come first in a sentence, where newer information will come towards the end. Different languages will accomplish this information distribution in different ways. A language like Czech, with an extensive set of morphemes attached to nouns indicating their relationship to the verb, may simply rearrange word order, while a language like English must use different syntactic structures, such as the passive. Kantor 1975 has suggested that the ability of a pronoun to refer back to something in an earlier sentence depends upon a communicative property of a sentence element called *topicality*, the communicative importance of the element to the discourse. Kuno 1972 categorizes four types of declarative sentences, each with different discourse functions and concomitant syntactic constraints.

Teachers of composition must examine questions like the following: How do you emphasize something? How do you make a smooth transition from one topic to another? How do you indicate the beginnings and ends of sections? Different languages accomplish these functions in different ways, and a great deal of research remains on what communicative functions there are and how they are accomplished.

d. Pronounceability. It is the function of phonological rules of assimilation and neutralization to make sequences of sound more pronounceable. In morphology and syntax, pronounceability is served in at least two ways: by principles imposing order on elements, and by principles avoiding certain difficult combinations of elements.

i. Ordering. A recurrent proposal in syntactic studies (beginning with Staal 1967 and including Vennemann 1973) is that the constituents of a phrase in basic phrase structure are not ordered with respect to one another, but are placed in their appropriate linear order by transformations. Under this proposal, one function of transformations is literally to make sentences pronounceable, since they words must in fact be ordered to be utterable. As Miller and Chomsky 1963:483 put it:

> Subjectively, we seem to grasp meanings as integrated wholes, yet it is not often that we can express a whole thought by a single sound or a single word. Before they can be communicated, ideas must be analyzed and represented by sequences of symbols. To map the simultaneous complexities of thought into a sequential flow of language requires an organism with considerable power and subtlety to symbolize and process information.

According to the proposal that the constituents in basic phrase structures are not ordered, English and Japanese would have the same phrase structure rules with the same meanings, for instance

{NP, VP} = S

{V, NP} = VP

In both English and Japanese the constituents of S would be ordered NP, VP, but in Japanese a transformation would order NP before V, while in English a transformation would order V before NP.

Even if we don't assume that basic phrase structures lack linear order, there will still be transformations providing alternative orders for certain constituents. All of these transformations can be seen as primarily providing variety (section g below), though they serve other functions as well. Three examples: the rule of Particle Movement, which derives (2) from (1)--

(1) I gave up meat for Lent.

(2) I gave meat up for Lent.

the rule of Cleft Sentence Formation, which derives (4) from something like (3)--

(3) Jack noticed a penguin.

(4) It was a penguin that Jack noticed.

the rule of Negative Lowering, which derives (6) from something like (5)--

(5) It is not so that pigs can fly.

(6) Pigs cannot fly.

Cleft Sentence Formation also serves a discourse function (section b above), since it focuses on one constituent in a sentence. And Negative Lowering also works for brevity (section f below), since it reduces a two-clause structure to a single clause.

Finally, it seems that not all ordering is done by phrase structure rules and transformations. Beginning with Ross 1967 and Perlmutter 1970, 1971, a great many surface structure constraints (SSCs) have been proposed, among them a number concerned with the ordering of elements within words and within sentences. SSCs are (static) _conditions_ on structures, rather than (dynamic) transformations. Perlmutter argues that the ordering of pronouns before the verb in Spanish (first _se_, then second-person pronouns like _te_, then first-person pronouns like _me_, then third-person pronouns like _le_) should be stated as an SSC rather than being achieved by a set of ordering transformations.

A possible example from English (though the arguments for an SSC here have not been laid out anywhere) is the ordering of elements in the verbal auxiliary: first a modal, then the perfect _have_ then the progressive _be_, then the passive _be_ (all together in the awkward _They might have been being beaten_).

The distinction between ordering done by transformations and order conditions expressed by SSCs might have important implications for second language learning, since there is a considerable universal component in the former, while the latter conditions seem idiosyncratic and language-particular. We might then expect learning of SSCs to be more difficult and to result in interference or avoidance.

ii. Difficult combinations. One striking type of syntactic combination that causes difficulties in production[8] is the repetition of morphemes with identical or near-identical pronunciations, as in the English sentence _I was surprised that that man came_, which many speakers find awkward to say, or in examples with two verb _-ing_ forms in sequence (Ross 1972b), like *_He has been trying washing every car that came his way_. There is no universal constraint against such sequences, since they are often tolerated--notice the two _do's_ in *Do do something quick!* However, they tend to be disfavored, especially when one or both of the morphemes lack stress.[9]

Languages adopt several strategies for avoiding these difficult combinations. One is simply to prohibit them, by means of an SSC. This is the strategy English takes with the double *-ing* constructions. Note, however, that there is an alternative construction for conveying the meaning: *He has been trying to wash every car that came his way.*

A second strategy is to use a transformation that reduces the two offending elements to one. Radford ms. 1974 gives examples in Japanese, English, Swedish, Hindi, Mandarin, and Polish, as well as the following French illustration: **Je préfère que tu restes, plutôt que que tu t'en ailles* 'I prefer that you remain than that you go away' becomes *Je préfère que tu restes, plutôt que tu t'en ailles*, with the deletion of *que* 'that'.

A third strategy is to use a transformation that converts the offending sequence to one with different elements. Radford gives examples in Serbo-Croatian and French, and the following German case: **Goethe ist bekannter als Schriftsteller als als Naturwissenschaftler* 'Goethe is better known as a writer than as a natural scientist' becomes *Goethe ist bekannter als Schriftsteller denn als Naturwissenschaftler*, with *denn* replacing *als* 'than' (although it cannot replace *als* elsewhere).

Once again, we can expect considerable interference and avoidance in language learning, since the learner has no way of knowing which sequences are offensive in $L_2$ or how the offense is treated—whether the sequence is simply prohibited, so that an alternative construction must be found, or whether it is reduced, or whether a special substitution is made for one element.

e. Perceptibility. We have already stressed that the chunking of language material, into words, phrases, sentences, and discourses, aids perception (and production as well). Pauses and pitches marking the boundaries between units make them even clearer, as do other phonological phenomena that 'demarcate' boundaries (Trubetzkoy 1939). Some transformations also aid perception by encoding larger units as smaller ones, much as encoding a binary number like 1001110 into an octal number, 116, makes it easier to perceive and recall; transformations of this sort are discussed in parts ii and iii of the next section.

There are at least two other ways in which transformations, or conditions on transformations, serve perceptibility: some transformations provide redundancy to sentences, and some transformations and conditions on them prevent perceptual complexity. We give some examples in the following two subsections.

i. Redundancy. In the technical sense, redundancy is not a bad thing; it merely refers to those elements in communication that could be eliminated without loss of information. Numerous writers (for instance, Chao 1968:205-6) have pointed out that both written and spoken languages need considerable redundancy, since the conditions of communication by language are never perfect (there are background noises, speakers make slips of the tongue or speak with their mouths full of food, listeners are inattentive or hard of hearing, etc.). Any extra information provided in language helps listeners to perceive correctly under the usual less-than-perfect conditions. Transformations of two types supply redundancy: government rules and agreement rules.

In government rules, a word takes a special form when it occurs in some specific construction. For example: (a) object pronouns in English have special forms, so that in We admire her the fact that the subject is we and the object she is indicated both by the ordering of the words in the sentence and also by the special form for objects, her; (b) verbs following the perfect auxiliary have take the past participial ending, so that in They have seen everything the fact that the sentence has perfect aspect is indicated both by the auxiliary have and by the special form for past participles, seen; (c) a NP preceding and modifying a noun takes the possessive ending 's, so that in your father's mustache the fact that the NP your father modifies mustache is indicated both by its ordering before mustache and by the ending 's.

In agreement rules, the form of one word is made to agree with some property of another word. Some English examples: (a) a verb in the present tense takes the third-person singular ending s when its subject is a third-person singular NP, so that in He admires them the fact that the subject is he and the object they is indicated in three ways (ordering, the object form them, and the s ending agreeing with the subject but not the object); (b) the modifiers this and that agree in number with the nouns they modify, so that in these monkeys the fact that monkeys is plural is indicated in two ways, by the ending s and by the form these instead of this; (c) in some dialects, indefinite pronouns agree in negativity with a preceding not, so that in They didn't see nobody nowhere the negativity of the sentence is indicated in three places (by n't, by nobody instead of anybody, and by nowhere instead of anywhere).

ii. Avoiding perceptual complexity. In Yngve 1960, 1961 it was suggested that one motivation for the existence of certain transformations is that they reduce the degree of what we might call 'heaviness on the left': they postpone this heaviness until the end of the sentence and thereby reduce the processing load on the listener, since the rest of the sentence will have been processed. The idea is developed further in Langendoen 1970. Among the English transformations with this effect are the following:

Extraposition

That he was a spy for the Ruritanians surprised us all. ⇒

It surprised us all that he was a spy for the Ruritanians.

Extraposition from NP

A man who was wearing a penguin suit came in. ⇒

A man came in who was wearing a penguin suit.

Heavy NP Shift

They gave the two proposals that they all felt were the best of the lot to Sharon. ⇒

The gave to Sharon the two proposals that they all felt were the best of the lot.

Passive

Every single person who had ever had the experience of passing through the Department of Anaerobic Bacteria hated Professor Smurd. ⇒

Professor Smurd was hated by every single person who had ever had the experience of passing through the Department of Anaerobic Bacteria.

(Notice that perceptibility is the primary function of Extraposition and Heavy NP Shift, while Passive is primarily motivated by discourse considerations). In some cases, perceptual complexity is averted by a condition on a transformation. For instance, Particle Movement is blocked from applying where there is a heavy direct object; compare:

I gave up all foods that contained more than 0.1% animal fat.

*I gave all foods that contained more than 0.1% animal fat up.

The matter of perceptual complexity is explored in detail by Grosu 1972, building on the work of Bever 1970. Grosu sees four sorts of difficulties that are alleviated by transformations or averted by conditions on them: erroneous closure, interrupted behavior, perceptual conflict, and unacceptable ambiguity. We now take these up briefly in turn.

Erroneous closure, or 'being led up the graden path', occurs when it is possible to understand the beginning of a sentence as a complete sentence; the listener then 'closes off' too soon and is puzzled by the remainder of the sentence. Erroneous closure can be used to explain why the transformation of That-Deletion (I believed that the earth was flat ⇒ I believed the earth was flat) does not apply to subject clauses, as in That Tom dislikes koala bears is odd: the result, *Tom dislikes koala bears is odd leads the hearer up the garden path, since Tom dislikes koala bears is a sentence in itself. Similarly, erroneous closure can be used to explain why the transformation Relative Pronoun Deletion (A man whom I don't like complained about the proposal ⇒ A man I don't like complained about the proposal) does not delete relative pronouns representing the subject of the relative clause, as in A man who got up complained about the proposal: the result,

***A man got up complained about the proposal*, begins with a complete sentence, *A man got up.*[10]

Interrupted behavior occurs when the processing of one unit must be broken up by the processing of another unit of the same sort as the first. Interruption is very burdensome perceptually. The perceptual complexity of interrupted behavior explains why there is a limit to the degree to which relative clauses can be nested one within another:

The school fired the teacher.

The teacher the school fired flunked the girl.

?The girl the teacher the school fired flunked cried about her grades.

*The grades the girl the teacher the school fired flunked cried about were abysmal.

Perceptual conflict occurs when the conditions on two transformations cannot be reconciled. It can be illustrated by the example **Diana was stabbed by herself*. Two of the transformations that have applied in this sentence are Passive and Reflexivization. Passive changes the focus of a sentence. But Reflexivization applies only when two NPs refer to the same thing. So, Grosu argues, how could Passive *change* the focus of the example in which the subject and object refer to the same person?

Finally, unacceptable ambiguity.[11] The reference here is to ambiguities that are in some sense 'intolerable' to speakers of the language. For an illustration, consider the fact that the transformation Pronominalization is blocked from applying in the sentence (1) below and in the discourse (2):

(1) Gerald and Nelson strode into the room, and

$\left\{\begin{array}{l}\text{Gerald}\\ \text{Nelson}\\ \text{*he}\end{array}\right\}$ began berating the reporters.

(2) Has Margaret spoken to Mildred about the impending bankruptcy?

$$\text{Yes, and } \left\{\begin{array}{l}\text{Margaret's}\\ \text{Mildred's}\\ \text{*her}\end{array}\right\} \text{ mother was most upset.}$$

Here, the result of the transformation is ungrammatical, presumably because it is impossible to tell who *he* and *her* refer to. Other examples are a bit more subtle. Sentence (4) below is grammatical, but not as a result of the transformation Extraposition from NP as applied to (3):

(3) A woman who was pregnant hit a girl.

(4) A woman hit a girl who was pregnant.

Here the existence of a different source for (4) blocks a rule from applying to (3). Examples of this sort have been treated in detail by Hankamer 1973 and Ruwet 1973 (who each propose a universal constraint against ambiguities of particular sorts).

In connection with *unacceptable* ambiguity, we must emphasize that most ambiguity is *acceptable*, in the sense that having more than one meaning does not in general cause sentences to be felt to be ungrammatical or impossible. Indeed, practically all sentences have more than one meaning, out of context, if only because so many *words* have more than one meaning: *the pen is hot* has *pen* with at least three meanings ('writing implement', 'enclosure for animals', 'penitentiary') and *hot* with at least two ('high in temperature', 'stolen'), so that the sentence has at least six distinct meanings, out of context. Even ambiguities introduced by transformations are usually innocuous: *I like Sam better than Harry* simply has two meanings ('I like Sam better than I like Harry' 'I like Sam better than Harry likes Sam'), rather than being impossible like the pronominalization examples above.

Since different languages have considerably different morphologies and rather different sets of transformations (as well as different ambiguities in individual words), the effect of (even universal) constraints against ambiguity will be different in different languages. The same is true for other sorts of perceptual motivations for rules and conditions. Moreover, some languages seem more willing to accept perceptual complexity in particular parts of their grammar than other languages.

f. Brevity. One important need of human communication is that it should take place on a time scale suited to human beings, in particular that a very wide range of complex messages should be communicable in quite short stretches of time (no more than a few seconds). Nothing we have said so far would guarantee this. The requirements that language be pronounceable and perceptible and that sentence types and discourse relationships be marked could be satisfied by giving a unique phonological realization to each piece of semantic and pragmatic structure (a proposal similar to those suggested by the universal grammarians of the 17th and 18th centuries and the artificial language constructors of the 19th and 20th). But the result would not be a usable language. Phonological deletions and coalescences would reduce the length of discourses somewhat, but they would still be far too long. Three sorts of transformations abbreviate discourses so as to make them usable: deletions and pro-ings, transformations reducing clause structure, and the insertion of lexical items. We take these up one by one in the subsections that follow.

i. Deletions and pro-ings under identity. Some transformations abbreviate sentences and discourses by eliminating repeated references or descriptions (by deletion under identity) or by replacing them by fixed short forms (by pro-ing).

Some examples of deletion transformations in English are Conjunction Reduction, which derives (2) from (1)--

(1) Apples are red and apples are juicy.

(2) Apples are red and juicy.

Gapping, which derives (4) from (3)--

(3) George ate a bagel and Chuck ate some sushi.

(4) George ate a bagel and Chuck some sushi.

and several rules illustrated in earlier sections--Comparative Deletion, in I like Sam better than Harry in the previous section, plus That-Deletion and Relative Pronoun Deletion, discussed there too. Deletion rules in discourse yield sentence fragments like those discussed by Morgan 1973:

What do you think Janet uses that butter for?

I suppose (Janet uses that butter) for greasing pigs.

Pro-ing transformations in English include two rules illustrated in the previous section, Pronominalization and Reflexivization, plus transformations yielding instances of one, do so, and so plus auxiliary:

Barbara observed a blue Egyptian cross-hatched bullbat, and Brutus noticed a red Egyptian cross-hatched bullbat. ⇒

Barbara observed a blue Egyptian cross-hatched bullbat, and Brutus noticed a red one.

I completely consumed a bucket of oysters in two minutes, and Max completely consumed a bucket of oysters in two minutes, too. ⇒

I completely consumed a bucket of oysters in two minutes, and Max did so, too.

My wife is going to Vienna next year, and I am going to Vienna next year. ⇒

My wife is going to Vienna next year, and so am I.

ii. Reduction of clause structure. Other transformations compact two clauses into one. Negative Lowering, illustrated in section d above, is one such rule. Also in this set in English are transformations reducing clauses to phrases, like the rules of Raising, Equi-NP Deletion, Gerundive Nominalization, and Abstract Nominalization, illustrated in order in (1)-(4) below:

(1) I believe that she is a spy. ⇒
I believe her to be a spy.

(2) I expect that I will break the bank at Monte Carlo. ⇒
I expect to break the bank at Monte Carlo.

(3) That Max eats so much vichyssoise amazes me. ⇒
Max's eating so much vichyssoise amazes me.

(4) For Zelda to transform Hugh into a toad took six hours. ⇒
Zelda's transformation of Hugh into a toad took six hours.

An important effect of clause reduction rules is that they may result in ambiguous phrases, because clauses of many distinct structures are compacted into a few phrase types. Simple illustrations of this compacting can be seen in ambiguous sentences like He saw her duck, where her duck can be either a basic NP or a basic clause she ducked reduced to a NP her duck. More interesting examples come from what might be called the 'favorite phrase structures' in particular languages (also known as 'syntactic targets', as in Haiman 1974). At the level of the word, English is especially rich in noun-noun compounds, like snowman, iceman, graph paper, rag paper, horse thief, kiddy car, girl friend; these represent a large variety of semantic relationships, discussed in detail by Lees 1960. Chinese is rich in 'subject-predicate' compounds, illustrated by combinations translatable as 'day brightens' for 'dawn', 'the sea screams' for 'tidal wave', 'the breath pants' for 'asthma', and 'male fades' for 'impotence' (Chao 1968:sec. 6.2). At the sentence level, English has numerous VP constructions of the form V NP Adj, among them the following (from Green 1970):

I found him dead.
She painted the house red.
She painted it sober.
They buried her alive.[12]

iii. Insertion of lexical items., The complete description of the syntax of a langauge must include not only a list of the smallest units, the morphemes, and a set of principles for combining units at each level into units at the next: it must also include a list of words like redcap, throughout, dog-eared, bagpipe, and once-over, whose meanings are not composed from the meanings of their constituent morphemes by general principles of the language; and it must also include a list of phrases like by and large, give up, rain cats and dogs, on the sly, be about to, yours truly, and you can say that again, whose meanings are not composed from the meanings of their constituent words and phrases by general principles of the language. A combination of elements whose meaning is not composed from the meanings of its parts by general principles of the language is called an idiom in technical terminology. Since individual morphemes and idioms of all sizes would have to be listed in a dictionary, or lexicon, for a language, morphemes and idioms together are sometimes called lexical items. An easy, but important, part of language learning is the learning of its lexical items, from the morphemes up to idiomatic sentences.

We assume here the view of the 'generative semanticists' (see section 4 below) that lexical items replace more complex structures, by a special sort of transformation. In any case, lexical items can stand for quite elaborate meanings--that is, a few morphemes can represent a good deal more.

g. Variety. Yet another function of transformations is to provide alternative forms for sentences. We have already given many English examples: the transformations Passive, Particle Movement, Cleft Sentence Formation, Negative Lowering, Extraposition, Extraposition from NP, Pronominalization, That-Deletion, Relative Pronoun Deletion, Raising, Equi-NP Deletion, Conjunction Reduction, Gapping, and others. It is also true that languages abound in different lexical items with the same or nearly the same meaning: die, expire, pass away, kick the bucket; huge, gigantic, enormous, great; and many other sets. There seems to be a genuine tendency towards a profusion of alternative ways of conveying the same meaning, towards variety for its own sake. In some areas of the vocabulary this profusion is enormous--Wentworth and

Flexner 1967:652-4 take up most of two pages listing synonyms for drunk in English--and the variety of paraphrases provided by transformations is great.

The tendency towards variety is opposed by another tendency in language, for there to be 'no distinction without a difference'. Pure variety is unstable: differences in form tend to be seen as corresponding to differences in meaning, or at least (like differences in pronunciation) to be understood as conveying differences in stylistic level or regional or social dialect. Because of this tendency towards differentiation, some linguists (for instance, Chafe 1970:86-90 and Bolinger 1975) have maintained that identity of meaning is much rarer than scholars have generally supposed.

The semantic and social differentiation of distinct forms presents special problems in language learning and language teaching. The teacher obviously must be aware of whatever differentiations in cognitive and social meanings are present in the children's first language. However, studies of syntactic variation (section 6a below) show considerable variability from person to person, and the same is true for lexical items. You have only to question a group of Americans about what sofas, couches, and davenports are to realize how much individual variation there can be in the meanings assigned to particular words. When syntactic constructions or lexical items show this sort of 'private differentiation', teachers should be aware of it; probably they should not attempt to legislate invariant usages for these forms.

## 3. The relationship between syntax and morphology.

We have already pointed out that the same or similar content can sometimes be expressed syntactically and sometimes morphologically--sometimes 'analytically' and sometimes 'synthetically'. Languages differ considerably in how they exercise these options. Thus, where English uses the modal auxiliary *will* or the construction *be going to* to indicate future tense (and has no morphological version of the future), French has special verb forms like (*il*) *chantera* 'he will sing', as well as the syntactic construction in (*il*) *va chanter* 'he is going to sing'. And where some other languages have 'dubitative' and 'reportive' forms of verbs, English must use syntactic constructions--the adverb *maybe* or *perhaps* in combination with the verb for the dubitative, and a two-clause construction with *I hear that*..., *Someone told me that*..., or something of the sort for the reportive. Differences of this sort cause interference and simplification in language learning, probably usually in favor of analytic constructions.

An important current area of research concerns cases on the borderline between syntax and morphology--*clitic* (literally 'leaning') elements, like the Spanish pronouns *te*, *me*, *le* mentioned above in connection with surface structure constraints, or the English contracted auxiliary verbs *'s*, *'d*, *'ve*, *'il*, *'m*, *'re*. Clitics are subordinated in stress to other words and usually show phonological reductions, often of an idiosyncratic sort.

What is of special interest to us here is that clitics show many syntactic peculiarities. The ordering of a clitic with respect to the word to which it is attached may be different from the ordering of a related nonclitic form; in French, object NPs follow the verb, but clitic pronoun objects come before the verb (*Je vois Jean* 'I see John', but *Je le vois* 'I see him'). Clitics may be attached to whatever word happens to be next to them, whether that word is semantically or syntactically related to the clitic word, as in the case of the English clitic auxiliaries. Or the clitics may all move to one spot in the sentence; the most common locations are: with the verb, at the end of the sentence, or after the first word of the sentence.[13] Finally, there are extremely complex conditions on when elements must, may, or cannot become clitics. One such condition on the contraction of auxiliaries in English is discussed by King 1970; further conditions on this contraction are treated by Zwicky 1970 and Labov 1972.[14] King attacked the problem of why contraction is permitted in sentences like The concert's in Royce Hall tonight, but not (for many speakers) in sentences like *Tell me where the concert's tonight. The answer ultimately concerns which transformations have applied in the two sets of examples. In any event, the conditions on cliticization and the principles governing the placement of clitics are likely to be stumbling blocks in language learning. Interference and avoidance may well be most severe when the languages in question have similar but not identical patterns of cliticization and clitic placement (as in the case of French, Italian, and Spanish). Also, there are often considerable dialect differences in the placement of clitics, differences that teachers may need to be aware of.

4. The relationship between morphology/syntax and semantics.

a. Form and function. It has long been realized that the connection between form and function in language is an exceedingly complex one.[15] To begin with, even the smallest meaningful units, the morphemes, have more than one phonological form; the English plural morpheme, for instance, has one pronunciation in cats, another in dogs, another in churches, another in men, another in oxen, etc., and the first three of these pronunciations are also used for two other morphemes in English, the possessive ending and the third-person singular. But this is only the beginning of the complexity, since a single morpheme can be used to convey a number of distinct (though related) bits of meaning, and the same meaning can be conveyed by a number of distinct morphemes. The disparity between grammatical gender and sex and the disparity between grammatical tenses and times are two standard examples of the complex relationship between morphemes and meanings. We will use the tense/time case in English as an illustration.

The English past tense morpheme has among its functions reference to past time. But this is by no means its only function. It may refer to the present time in 'unreal' situations: I wish I knew. And it may refer to future time: It's time you went to bed. On the other hand, the past tense morpheme is not the only way to refer to past time in English. This can be done a perfect form: I have seen Austria. Or with a present form, in the so-called 'historical present' of colloquial English: So he says to me... Or with the modal auxiliary would: I would often see him walking across campus. Or with the used to construction: She used to be fretful.

This same disparity between form and function can be found at every level of grammar, from the morpheme up. It can be seen, for example, in the meanings associated with the syntactic classes Noun, Verb, Adjective, etc. Many nouns are the 'names of persons, places, or things', but some are not: in They took a walk and We avoided his grasp, the nouns walk and grasp describe acts, not persons, places, or things; while in *rural policeman* and *solar battery* the adjectives *rural* and *solar* do not describe states, but instead name a place and a thing, respectively. At the level of the whole sentence, we observe that declarative sentences are not invariably used to make statements, interrogative sentences to ask questions, imperative sentences to request or command: the interrogative sentence *Would you pass the salt?* makes a request, as does the declarative sentence *I'd like the salt,* while the imperative sentence *Add salt, and the solution will turn blue* makes not a request but a statement.

For each of these examples we should point out that there are certain *standard* or *normal* associations between form and function: the normal use of the past tense is for past time reference (which is why the tense is called *past* and not, say, *recent*);[16] the normal use of nouns is to refer to persons, places and things (which is why the class is called *noun*, from Latin *nomen* 'name', and not, say, *state*),[17] and the normal use of imperative sentences is to make requests and commands (which is why the sentence type is called *imperative*, from Latin *imperāre* 'to order, command', and not, say, *declarative*). The existence of the standard associations can be exploited in language learning in an obvious way. Problems arise with the exceptional associations, however; some of these recur in language after language (the 'historical present', for instance, and the use of a declaration of wish or desire to convey a request)--though the learner has no advance assurance that the language he is learning has these exceptional associations--but many are quite arbitrary and therefore constitute learning difficulties.

b. Compositional semantics. The previous section concerned the way in which meanings are associated with individual elements at various levels of linguistic structure. But an account of the relationship between morphology/syntax and semantics requires not only an association of elements with meanings but also an account of how the meanings of larger units are composed of the meanings of their parts. This apparently simple-sounding issue has led to what is undoubtedly the hottest controversy in syntactic theory these days and generated an enormous bulk of literature, some concerned with polemics, some with theory construction, and some with language description. To see what the problem is, we must return to some matters last discussed in section B of this paper.

There we motivated a view of syntax in which the great diversity of constructions that occur in a language is derived from a much smaller set of structures (the basic phrase structures for that language) by means of transformations. Now, when we ask how meanings of larger structures are composed of the meanings of smaller ones we have to decide *which* structures we are talking about: the actual (or 'surface') phrase structures of sentences, or the basic phrase structures, some intermediate creatures, or some combination of these. The position of Chomsky 1965 was that semantic interpretation works only on basic phrase structures (or *deep structures*, as they are often called). Indeed, one sort of argument for positing such basic structures in the first place was that they made the semantic relationships among the parts of sentences more perspicuous. Exactly the reverse assumption was made by the philosopher Montague (see the papers collected in Montague 1974, and Thomason's introduction to the volume); there the principles of compositional semantics work with the surface phrase structures, and transformational analysis is not necessary. A mixed approach was advocated in Chomsky 1970: both surface and basic structures figure in semantic interpretation. A detailed presentation of a mixed system is given in Jackendoff 1972.

Note that the linguists' approaches to semantic interpretation all use basic structures in some way. It is then natural to ask what the difference is between basic structures and representations of meaning, since basic structures are in many ways closer to accounts of the semantic relationships in sentences than surface structures are. The proposal that basic structures are the representations of semantics has come to be known as 'generative semantics' (see, for example, the expositions in Lakoff 1971 and McCawley 1973), while the proposal that basic structures are different from the representations of semantics has come to be called 'interpre(ta)tive semantics' (see Chomsky 1970 again). These issues have been hotly debated, largely on technical matters of little interest to this symposium. However, there is at least one topic of importance here: the semantic basis of syntactic phenomena, a topic we have touched on several times already.

Many transformations, like the rule of Raising, apply only to certain forms: We believed Adolf to be a spy, but not *We thought Adolf to be a spy, although both We believed that Adolf was a spy and We thought that Adolf was a spy are possible. Is this purely a fact about syntax, or is there a semantic basis for the difference in behavior between believe and think? Interpretive semanticists are inclined to see syntactic structure as largely independent of semantics, while generative semanticists are inclined to see syntactic structure as following from semantics.

There are clear implications in language learning: if the interpretive semanticists are right, the learner is faced with the task of mastering two parallel systems and the principles governing their interrelationship, while if the generative semanticists are right, the learner is faced with the task of mastering one basic system (semantics) plus the principles realizing this system syntactically (the transformations). A very interesting exploration of the generative semanticists' proposal in this regard is Green 1974, a work in which an all-out effort is made to find a semantic characterization of the verbs permitting one transformation in English (Dative Movement, which relates I gave the chart to her and I gave her the chart). Green succeeds, but only by characterizing a number of distinct classes of verbs permitting the rule; Green concludes that there are several transformations working towards what we called a 'favorite phrase structure' in section C2f above. We cannot predict from general principles exactly which classes of verbs permit the rule--Green does not demonstrate that there is any intrinsic connection between the semantics of these verbs and their undergoing Dative Movement, and besides, there is variation from speaker to speaker as to which verbs permit the rule--but her results suggest that more use could be made of semantic properties in teaching the grammar of a second language, yet more along the lines of statements like 'verbs of desire take both ut and the infinitive' in traditional grammars, though not necessarily as rules to be learned by the students.

5. The relationship between syntax and pragmatics.

a. The performative analysis. In early transformational grammars, sentence type was not specially represented in basic structures, so that imperatives and interrogatives were derived by transformations from declaratives. In slightly later work, abstract markers like Q (for question) and I (for imperative) triggered the relevant transformations. Ross 1970 and Sadock 1969 proposed a more complex analysis, in which every sentence has a basic structure in which the surface content of the sentence is the object in a structure of the form: I VERB (to) you ____. That is, the declarative sentence She is tall would have a basic structure roughly like I declare to you that she is tall, while the interrogative sentence What is life? would have a basic structure roughly like I ask you what life is. This analysis has been called the 'performative' analysis, because it takes as basic certain sentences like those Austin 1962 termed performative (because they perform an action rather than making a statement that could be judged as true or false; I hereby pronounce you man and wife is a paradigm performative sentence). The analysis has been the subject of some controversy.

The major line of evidence for the performative analysis comes from parallels between the syntax of a particular sentence type and the syntax of clauses subordinate to verbs of speaking appropriate to that type. In the case of imperatives, for instance, the similarities are between main imperative sentences like Please move your camels and clauses subordinate to verbs of requesting or commanding, as in I request you to please move your camels. The literature on cross-linguistic aspects of these similarities is surveyed in Farwell 1972. In general, it can be said that the parallels are considerable.

b. Indirect speech acts. The analysis of sentences whose use is not directly related to their form has been a matter of much discussion; there is a survey of several of the contending proposals in chapter 4 of Sadock 1974. The central issue is whether the indirect uses of sentences can be predicted in a general way from their direct uses. We might, for instance, argue that since it is reasonable to request someone to do something only if he is able to do it, we can suggest that he do it by asking if he is able to; by such a chain of argument we could conclude that in general it is possible to get the effect of requesting someone to do something by asking him if he is able, so that Can you move closer? gets the effect of Please move closer. Reasoning like this certainly explains why sentences can get the effects they do, but it does not explain why certain indirect forms seem to succeed without any particular calculation on the part of the speaker or hearer (Would you pass the butter? is simply one way of requesting the butter in English); in section 2b above we suggested that the forms have become idioms and therefore must be memorized in language learning.

## 6. Variation

a. Individual variation. Syntactic studies have shown the existence of dialects--systematic variation among groups of speakers. However, it is sometimes found that the groups of speakers are not bound by geographical location, social group, or ethnic group. Indeed we may find that members of the same household speak different dialects with respect to some syntactic/semantic feature.

For example, Carden 1970 finds that there are three major dialects with respect to the interpretation of sentences like

(1) All the boys didn't leave.

Some speakers of English interpret sentence (1) as meaning only

(2) a. Not all the boys left.

That is, the word not is interpreted as negating the 'quantifier' all. This dialect is known as the NEG-Q dialect. However, there are other speakers of English who understand (1) as meaning only (2b).

(2) b. All of the boys [didn't leave] (= None of the boys left) (= All of the boys stayed).

Here, the negative element is associated with the verb. Speakers who understand sentence (1) in this way are said to speak the NEG-V dialect. Yet a third group of speakers find sentence (1) to be ambiguous; they understand (1) as both (2a) and (2b). Such speakers are said to have the AMB dialect.

Now, if a teacher says to the class,

(3) All of you aren't behaving.

how is any individual student to interpret this statement--as a chastisement of himself, or of others in the class who are misbehaving? But, of course, much more serious than this would be for a teacher to correct a student for 'not saying what he meant' when in fact the student and teacher have conflicting dialects with respect to a particular syntactic feature.

b. Implicational relationships. Ross, in a number of articles (1972a, 1973b, 1973b) tackles the interesting problem of what it means for an element to belong to a syntactic category or class. One of the great virtues of transformational grammar has been its ability to characterize higher-order constituents, that is, to show that not only is a proper noun like John a noun phrase (NP), but also so is something as complex as a relative clause, as in the boy who gave me the look, or nominals like John's breathing too deeply, or even for-to complements like for John to leave. Note that all of these NPs can be used as subject of a sentence:

(1) a. Max upsets Jim.
b. The boy who gave me the look upsets Jim.
c. Max's breathing too deeply upsets Jim.
d. For Max to leave upsets Jim.

Note, however, that in another syntactic frame only some of these NPs yield grammatical sentences:

(2) a. I believe Max to upset Jim.
b. I believe the boy who gave me the book to upset Jim.
c. ?I believe Max's breathing too deeply to upset Jim.
d. *I believe for Max to leave to upset Jim.

The reader may find sentence (2c) here to be perfectly grammatical. In fact, according to Ross, individual speakers will vary on grammaticality judgments of an individual sentence. However, all speakers will fit into a scale as to which NPs are grammatical when undergoing any syntactic process. Thus, any time a speaker accepts a sentence like (1d), in which a for-to phrase functions as an NP, he will accept all nominals of the type in (1c). There is an implicational relationship in English that says proper nouns, as in (1a), are more 'noun phrasy' than nominals, which in turn are more noun phrasy than for-to complements. Speakers of a language will not violate the noun-phrasiness hierarchy, although they may differ individually about a cut-off point for any particular syntactic frame. These squishes, as Ross calls his hierarchies, have been shown to exist for a wide range of syntactic categories and syntactic frames, and indeed can explain why the grammaticality of some sentences may be disputed by two speakers of the same language.

Keenan and Comrie (ms. 1974) discuss another kind of implicational relationship, one which they posit as a universal. Keenan and Comrie set up a case hierarchy

SUBJECT ≥ DIRECT OBJECT ≥ INDIRECT OBJECT ≥ OBLIQUE ≥
GENITIVE ≥ OBJECT OF COMPARISON

and assert that if a language can form a relative clause on a noun in one position, it can form a relative clause on nouns in all positions above that one. Thus English can form relatives on genitives, as in the boy whose mother I saw, and, by the implicational universal, on oblique objects (the man from whom I received a letter) and so on up the hierarchy to subjects (the girl who hit Bill). Other languages may be able to form relatives only on subjects and on no other position. These possible differences in languages make predictions about interference problems. Interestingly, this case hierarchy has been shown by Keenan 1975 to reflect differences between syntactically simple literary style and more complex style: authors judged to have simple style--George Orwell, for example--relativize much more heavily on subjects, while authors like Virginia Woolf, who are judged as using syntactically more complex sentences, have a greater percentage of non-subject relative clauses. Hierarchies such as the one shown here would be useful both for predicting interference problems and for evaluating the level of acquisition of different syntactic structures.

c. Patching. Morgan 1972:285 notes that the rule of subject-verb agreement in English is learned 'as a relatively simple principle, but fails to extend to complex cases'. Consider, for example

(1) (Either) Harry or his parents $\left\{\begin{matrix}\text{is}\\ \text{are}\end{matrix}\right\}$ coming.

Some speakers will accept only *is*, some accept only *are*, some accept either, some reject both, and others can't make any kind of judgment. Morgan suggests that different speakers will treat such constructions in different ways by adding new subsidiary principles to their grammars in an idiosyncratic fashion. He believes that, faced with a construction like (1), a speaker will *patch* his grammar in some way, or sometimes even fail to patch and decide that the sentence can't be said. It would be useful for a teacher to know where the rules of a language fail in this way. Appeals to 'logic', translations from other languages, textbook rules, or the teacher's own speech are likely to be unconvincing to the students. Probably simple toleration of alternative usages would be the best course.

d. Specific styles. In addition to variation from person to person, dialect to dialect, and language to language, there is variation from situation to situation. The analysis of specific styles, with examples from conversation, newspaper writing, legal documents, and other sources is considered in some detail by Crystal and Davy 1969. Other specific styles are easily isolated--the style of scientific writing, the style of recipes and labels (see Sadock 1974), the style of newspaper headlines, the style of children's rhymes and taunts, etc. School children, in both monolingual and bilingual environments, are expected to become facile in using a number of these specific styles, although the task is often not presented to them in this light. Teachers should be aware, at least in a general way, of the stylistic repertoires they have themselves, of the ones their students have, and of the ones they want the students to use in various school situations. Since there are substantial syntactic differences between styles, teachers should also know something about the nature of these differences.

### 7. Syntactic change

Languages, when they come into contact, typically will influence one another. We might even expect to find dialect differences within the same age group depending upon how much contact with a second language any particular child has had while learning his native language. While we have already noted the importance of studying the dialects of the languages spoken, it is important to note further that these dialects may be (and almost certainly are) changing, and we must be alert to these changes to update materials for language teaching and to keep course materials in general appropriate for classroom use.

Fasold (ms. 1975) also notes that we must be alert to language shift, in which speech communities may be abandoning their native languages. If and when a decision might be made with regard to language maintenance, or in some cases language revival, within the context of a bilingual education program, a certain amount of prescriptivism will be needed in preparing instructional material, and a good deal of combined sociolinguistic and syntactic study will be called for to determine how best to implement such programs.

In general, we can say that languages are always changing, and that these changes have a rationale (usually in terms of the functional considerations we sketched in section C2 above) and sometimes a discernible direction as well. For an illustration of the way language can change, consider English, which in the 300 years from 1200 to 1500 A.D., moved from putting an object after the verb about half of the time to placing the object after the verb almost all of the time (Fries 1940). Even now English is changing in different ways in different areas among and as a result of contact with different ethnic groups, social groups, and regional groups.

Vennemann 1975 discusses drift, the tendency of a language towards specific directions of change. Some linguists believe we can identify such tendencies and predict some changes which will take place in the future. It would, of course, be useful for educators to be alert to these trends.

## D. Proposed Research in Syntax

From our survey of research in syntax above, and from the general discussion in section B2 of the relevance of this sort of research to bilingual education, we can now extract some specific proposals for research programs. A number of these, for instance the proposal of acquisition studies in the 6-12 age range, echo the recommendations of other participants in the Symposium on Bilingual Education. Some call for more theoretical research, others for more obviously practical investigations.

1. A guide to language analysis. In view of the fact that linguists will not be available to study all varieties, and realizing that any language (such as the Indian languages of Mexico) may some day be a part of a bilingual education program, we propose that a guide

language or from slowing the rate of second language acquisition by special attention to the structures involved. And if the influence is likely to occur in a fairly brief transition stage, then it would be useful to know that special attention is not needed.

4. Variation studies. For any particular program in bilingual education, the dialects, varieties, and styles of speech used, both of the native language and of English must be adequately understood, described, and made known to those concerned with the program. We would thus support funding of researchers to describe the dialects, varieties, and styles of all languages involved in the bilingual education program.

5. Language contact studies. The bilingual-bicultural classroom is only one of a large number of situations in which language contact and interaction play an important rôle; other contact situations result in the development of trade languages, pidgins and creoles, 'accented' varieties, 'mixed languages', 'foreigner talk', mutual borrowing, etc. From the study of these situations we can hope to learn about the types of constructions that are most easily learned in uncontrolled language contact, and then to exploit this information in the design of instructional materials.

6. Language acquisition studies. We also suggest the funding of second language acquisition studies of children in the 6-12 age group. This age group has not been studied enough, and problems associated with their learning of a second language will be quite different from those of the well-studied 5-and-under age group, who seem to learn second languages in much the same way as they learn

to language description in the field be written. Such a guide (which would be based on the sort of research on universals and typology outlined in section C1 above) would be a manual of what to look for in a language, and would be intended for a field worker who is not a linguist as well as for a teacher who might encounter a student or students with dialect features previously unknown to him/her.

2. Development of course materials in linguistics. We support establishing two sorts of programs for people involved in bilingual education: (a) for curriculum planners, materials designers, evaluators and test designers: short courses in linguistics, covering the sort of topics we have outlined in this paper; the point of such courses would be to alert these people to the complexity, variety, and regularity of language (ideally, with special reference to the particular languages they deal with); (b) for teachers involved in bilingual-bicultural programs, short courses in applied linguistics, making use of the guide to language analysis just described; the point of these courses would be to alert teachers to important differences in languages and varieties, to counsel tolerance of differences when this is appropriate, and to suggest remedies when change should be encouraged (again, with special reference to the particular languages the teachers deal with).

3. Contrastive analysis and error analysis. We would support the funding of contrastive analyses and error analyses between any language and English (or between other language pairs, if the need arises), as well as analyses of the languages individually, to identify similarities and differences between the languages. When influence can be predicted, it can often be prevented from altering the first

their first language.

7. Surveys of classroom problems. A very direct and practical attack on problems in the bilingual classrooms would be to survey what teachers themselves see as difficulties involving grammar and to ask what kinds of information and materials they need. Such a survey would be easy to make and could be very useful, even though it would not be the same thing as a direct analysis of problems and needs (since even quite sensitive teachers can misidentify the source of a problem or fail to see a genuine difficulty or need). Further direct observation and experiment (along the lines of Cohen 1975) would also be valuable.

8. Theoretical research. As we pointed out in section B2c above, even very 'pure' research can have educational implications. Syntactic theories have made contributions to education already (granted, not nearly such enormous contributions as some writers have claimed), and we can expect further contributions as theories are advanced and developed.[18]

## Footnotes

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1. The asterisk indicates an impossible combination.

2. This discussion of syntax leaves out several important further complexities, to be dealt with in section 2c below.

3. For some general discussions of the phonology of 'casual speech', see Zwicky 1972, Dressler 1975. Dressler particularly stresses the importance of casual speech studies for language learning.

4. See section C4 and Lyons 1968: ch. 7.

5. The organization of this section, and many of our specific comments, owe a lot to a research proposal 'Language Typology and Syntactic Field Work' submitted in 1975 to the National Science Foundation by the Center for Applied Linguistics.

6. The material in this section follows in part the arguments of Hass 1970 and Fraser 1973, though it is not directly based on either of them. An earlier version of parts of this section was read by Zwicky in 1973, at the Washington (D.C.) Linguistic Circle and the Graduate Center at the City University of New York.

7. The general interchangeability of active and passive sentences (and similar pairs) in discourse was one of the motivations behind

Harris' positing of transformations in the first place. See Harris 1952 and later works from the Transformations and Discourse Analysis Project at the University of Pennsylvania.

8. Combinations causing difficulty in perception are treated in the next section.

9. This section summarizes the material on the Like Form Constraint in Radford ms. 1974. Radford notes the distinction between the sequences of elements covered by this constraint and the common linguistic phenomenon of reduplication, in which the repetition of some element conveys a specific meaning in itself.

10. This example, and its history, is treated at considerable length by Bever and Langendoen 1971.

11. The term seems to be due to Lakoff 1973.

12. Hunt 1973 notes that the command of deletion and reduction transformations characterizes writing skill. Sophisticated writers will include more subordinate clauses in sentences. And of course, the more subordinate clauses added, the greater the length of the sentence. Only through the use of deletion and reduction transformations can a writer 'pack' more information into a readable unit. Children's writing skill and development, Hunt maintains, can in fact be measured by calculating the degree of subordination and clause reduction in a sentence.

13. For bibliography on some languages placing clitics in 'second position', see Hale 1973:340.

14. Selkirk 1972 surveys the literature on this cliticization and a number of others in English and French. Kayne 1975 gives a very detailed treatment of the syntax of the French clitics. A summary of dialect differences in the treatment of the English auxiliaries can be found in Wolfram and Christian 1975.

15. The introductory discussion in this section is an adaptation of material in chapter 3 of Jespersen 1924.

16. The English perfect is then misnamed, since its normal use in modern English is not for 'perfected' or completed action.

17. See the proposal in Lyons 1966.

18. 'Functionalist' theories, for instance the Cognitive Grammar of Lakoff and Thompson 1975, are promising in this respect.

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# RESPONSE TO THE
# ZWICKY-KANTOR PAPER ON SYNTAX

Gustavo Gonzales

# BILINGUAL SYMPOSIUM: SYNTAX

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I appreciate the opportunity to address this group of distinguished colleagues in this attempt to explore ways in which theoretical linguistics can be of benefit to bilingual education.

I would like to begin by stating that Professors Zwicky and Kantor have done an admirable job in presenting such a complex subject with unusual clarity. They have made the field of syntax readable and understandable. They are to be commended for their efforts.

I approached the paper on syntax from two perspectives: that of a bilingual teacher at the elementary school level; and that of a trainer of bilingual education teachers. If theoretical linguistics is to have any impact at all, it has to be at these levels, for these two groups of professionals are the ones that serve as bridges to the children who are the ultimate beneficiaries of bilingual instruction.

Bilingual instruction/education as I view it consists of presenting content material (the usual public-school subjects) in both the native language of the children and the second language, usually English. The comments that follow also reflect this point of view.

## GENERAL REACTIONS.

There was a general feeling of a large gap still existing between the theoretician and the practitioner in bilingual education, not in terms of a theory that is beyond the understanding of all but a chosen few, but rather, of transmitting the information to those that will ultimately use it. We are speaking here of teachers in a public school setting, teachers who may vary in linguistic training considerably. In addition, the audience to be reached includes teacher aides and the parents of children in bilingual education programs. Linguistics in its most elementary form will be new and foreign. If the theoretical linguist wants to have some effect on bilingual instruction, he/she must confront the problem of translating the same principles into "jargon-less" language.

In addition, it will be necessary to provide concrete examples of how such-and-such a linguistic principle can be of direct and immediate benefit to them in their everyday instruction. How does Conjunction Reduction Transformation help me to be a better teacher in a bilingual classroom consisting of thirty children? Other than knowing that it is an important principle in theoretical linguistics, of what benefit is it to me or my teacher aides? How can I convert such principles into concrete and practical language lessons and/or language learning activities? To those of us that work in bilingual teacher training, this may sound all too familiar. Teachers need (or want) recipes to follow. Somewhere along the line, this translation and transition will have to take place. To expect the teachers and aides to be able to convert linguistic theory into everyday teaching activities may be expecting a little too much.

The exact role of the linguist with regard to bilingual teacher training (as well as other aspects of bilingual education) needs to be defined. Is it our role to tell bilingual education teachers in the elementary classroom what aspects of syntax they should consider important, or is it our role to listen to their language concerns, identify causes for these and suggest remedies? If the former, the present paper should serve as a good beginning toward that goal. As mentioned earlier, modifications in technical vocabulary and examples of applicability of principles to classroom instruction would be necessary. If the role of the linguist is the latter, we need to begin by listening to the language concerns of teachers and proceed from there. Based on our experiences in bilingual teacher training at UC Santa Barbara, it would seem that most concerns can be handled through contrastive linguistics.

I was somewhat disturbed with the overwhelming emphasis on the learning of the second language (English), and the lack of material on the importance of maintaining the first language, and what the research on syntax has to say on the maintenance of a first language when in contact with a second language. This is perhaps due to the sad state of the art and not an oversight on the authors' part. Emphasis on ESL, it should be pointed out, is not in keeping with the goals of bilingual education.

## SPECIFIC OBSERVATIONS

On page 5, paragraph ii: I question the usefulness of language universals and typologies to bilingual education. Again, we must bear in mind who the audience is. Teachers and teacher aides in bilingual classrooms will raise similar questions of utility unless there can be some way of demonstrating direct and immediate applicability to the teaching of bilingual children.

On page 6, paragraph 2.a., Language 2 influences on Language 1 will probably be less than that of language 1 on language 2. The primary effect of language 2 on language 1, and a lethal one, is the potential elimination of Language 1 through pressure from language 2-speaking peers. If Language

1 is to be maintained and bilingualism is to be achieved, this negative influence on the use of language 2 must be minimized and, if possible, eliminated.

On page 7, under areas to be explored: In addition to those mentioned, it would be advantageous to know which $L_1$ structures are most impervious to influence from the other language and which are most susceptible; this would allow the teacher to devise strategies for re-activating and/or re-inforcing those structures. If these strategies differ from those used in teaching $L_2$ structures, how do they differ?

On page 11, paragraph B.1. It seems to me that the concerns expressed regarding learning languages from the same or different typologies is less important than learning the TYPES of interference posed by same and different typologies. The concerns stated in the paper are and should be the domain of linguists, but the relevance to the bilingual education teacher is unclear. Of what benefit is it to the bilingual teacher to know that English belongs to typology X, but Spanish belongs to typology Y? Knowing the types of intefference that are likely to occur would seem to be more important, and this seems to have been covered on page 6, paragraph 2.

Page 13, Language Universals: From a bilingual teacher trainer's perspective, I can see the importance of knowing that 'there is only a handful of ways to ask yes-no questions.' Much more important, and more directly applicable, are the specific ways in which these ways of asking yes-no questions are similar to and different from each other. That other languages share this same feature is fine, but for a teacher whose main concern is $L_1$ and $L_2$, information on further liaisons is superfluous. Again this is the proper concern and domain of linguists, but of limited value to bilingual teachers.

Who are the 'bilingual education planners' referred to on page 58? Are they at some minimal level of proficiency in linguistics? If their level of competency in linguistics is the same as that of the teachers, it will be important to convey the important information as non-technically as possible, and to demonstrate its utility and applicability in the bilingual education classroom, with specific reference to their own $L_1$ - $L_2$ language situations.

I am in complete agreement with the types of research activity proposed on pages 58-60, especially the development of the 'guide to language analysis.' It is my hope that the National Institute of Education will proceed to initiate such studies as have been identified here and at other meetings held under its sponsorship. We seem to know what the questions are; it is now time to seek answers. It is time to stop defining and delineating the problems to death. We know what needs to be done; it now remains for us to enlist the monetary resources of agencies such as NIE to research the areas that have already been identified time and again as critical.

# SEMANTICS

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Semantics is the area of linguistics which deals with meaning. This simple definition, while true as far as it goes, is in need of some expansion, for in at least one sense it claims that all linguistics is semantics. Our first task here will be to discuss the term "meaning" and arrive at some usable sense of the term which will allow us to survey the field called semantics; we can then proceed to discuss the interrelationships of semantics with syntax and pragmatics.

Let us first consider a narrow sense of the word "meaning", one in which only words (or, for the linguistically sophisticated, morphemes) can be said to have meaning. This leads to a view of semantics as lexicography, which is an idea that has held some sway in various circles at various times. On this view, we can speak of the meaning of a word, but not the meaning of a sentence as distinct from the sum of the meanings of its constituents. Unfortunately, this view is somewhat too narrow, since linguists need to be able to talk about the meanings of sentences (or utterrances) independently of the meanings of the words comprising them; and in a sense it is silly to speak of the meaning of a word outside of an utterrance, since words do not appear outside utterances in human behavior, which is, after all, supposed to be distinguishable from animal behavior just by the possibility of such meaning-bearing devices. Similarly, many dictionary meanings make sense only in a sentential context. Thus:

(1)a It's not apparent that he will arrive on time.
   b It's apparent that he will not arrive on time.

(2)a It's not likely that he will arrive on time.
   b It's likely that he will not arrive on time.

(3)a He got sick today.
   b He got the package today.
   c He got married today.
   d He got the idea today.
   e He got the storm windows up today.

We would like to be able to say that (1)a does not have the same meaning as (1)b, while (2)a and b are much closer to having the same meaning; however, the a sentences in (1) and (2) contain the same words as their respective b sentences, and the ordering is the same in each case, so a componential word-meaning approach is no help here. (3) raises the question of just how many meanings we must assign to the word got (or, alternatively, just how many words got there are in English) in order to account for the various uses manifested---and there are many more. We seem drawn to the conclusion that words have meaning only in the context of an utterrance.

But this view, too, is too restrictive. Utterrances occur in the context of a speech situation, and it can affect their meaning drastically. Consider:

(4) Mary should be home by 12.
(5) This is Frank Smith.
(6) He didn't.
(7) Bill thinks on the kitchen table.

(4) can have at least two meanings, depending on the context; if it is utterred by Mary's mother to the young man escorting Mary as they leave the house, it has one meaning---if utterred by Mary's husband over the telephone to someone calling Mary, it has a different meaning. (5), which seems straightforward, also has a different identity when utterred on the telephone as an identification phrase, as opposed to its meaning when it is used by someone to point out a picture in an album. The meaning of (6), of course, depends entirely on the context to supply information as to who he is, and what he didn't do. Finally, the rather bizarre scene conjured up by (7) dissolves when the sentence is put into context as an answer to (8):

(8) Where did you leave the checkbook?

One can, of course, go further. The ordinary language use of the word "meaning" is very broad, and takes into account everything we've said so far, and much more. Ordinary speakers of English do not hesitate to use the word to mean not only the meaning of a word or sentence in context, but also the sense of the context as well:

(9) What's the meaning of this intrusion?
(10)a First Psychiatrist: Good morning.
b Second Psychiatrist: I wonder what he meant by that.
(11) Running out of gas on a lonely road means a long walk into town.

(12) The meaning of the Treaty of Brest-Litovsk is hard to assess.

and so on. But here the semanticist draws the line. A study of "meaning" along these lines would approach a study of the entire universe and the interactions of all its components. It is stretching things a little to lump this under linguistics of any sort. Semantics, then, is concerned with the meaning of words as used in utterrances, and with the meaning of utterrances as used in contexts (primarily linguistic contexts, where the semantics of the other utterrances can provide commensurable data).

Now that we have defined somewhat our area of interest (and note that we have cleverly avoided defining the word meaning---the ordinary language sense, suitably restricted, will serve us well enough), the question arises as to the relation of semantics with syntax and pragmatics. If semantics studies the meaning of words in utterrances, surely it is related intimately with syntax, which is the area that studies the structure of utterrances? And if semantics is concerned with the context of the speech situation, doesn't it overlap with pragmatics, which studies the personal interactions that are the stuff of speaking? The answer to both these questions is, of course, yes.

Since all three of these fields study a unified phenomenon ---human speech and language---it is to be expected that there is a considerable degree of overlap. In fact, many linguists (including the present author) would maintain that the three fields are in principle indistinguishable, and that a unified approach is necessary. In approaching the task of writing this paper, therefore, I have experienced some trepidation, since the areas of syntax and pragmatics are represented by separate reviews in this volume.

Perhaps an appropriate metaphor will do the best job of placing semantics in a broader perspective. Syntax, semantics, and pragmatics may be conceived of as lights shining from different directions on a tangled skein of phenomena called "language". If we consider only the light from a single source, some phenomena will be highlighted, and others obscured in shadow; each light will pick out different things to illuminate. In order to see the whole picture, however, we need all the illumination we can get. The actual light that is shed that by these sources is analogous to the methods of investigation inherent in the disciplines: syntax deals with structures and constituents, semantics with the interactions of meaningful elements, and pragmatics with human interactions and communication. All have empirical bases, and all make use of intuitions---syntax deals in grammaticality judgements, for example, while semantics uses intuitions about synonymy and paraphrase, and pragmatics about acceptability and conveyed message in context.

Every once in a while a linguist will deliver himself of the opinion that one or another of these fields is basic, and the others "follow from" it in some way. Such statements should be treated with the utmost caution, since what they really mean is that the linguist in question has succeeded in finding certain aspects of language behavior irrelevant and/or uninteresting, and has convinced himself that an autonomous theory can resolve the problems he _is_ interested in. Typically, his interests will not be the same as most other linguists', so his theories will be unsatisfying to them in the long run. They may, however, be productive of much stimulating research in the chosen field, which can ultimately be of benefit to all fields.

American linguistics is currently in the process of recovering from a twenty-year syntax binge (known in the trade under the code name of "generative" linguistics), which has produced an unbelievable amount of controversy, theory construction, and, most importantly, sound results and generalizations which are useful in all areas of linguistics. Semantics and, to a lesser degree, pragmatics have benefited enormously from these developments, and linguists of all persuasions are now at work trying to integrate the ongoing research of several schools. The lights have never shone brighter; so much so that it is possible to get lost in the glare sometimes. It is the purpose of this paper to look at some of the things that have been at least partially illuminated from the viewpoint of the semanticist.

A further purpose is to make suggestions as to the applications of semantics to bilingual education. This makes the job easier and harder. It is easier because there are certain areas of inquiry in semantics, for example, model theory and Montague grammar, which are so abstruse and theoretical that it is virtually impossible to conceive of their being applicable to a practical concern like education of any kind. Accordingly, I will not mention them further here. It is harder, on the other hand, because I am not familiar enough with bilingual education and its problems (nor, for that matter, with many of the problems of more usual educational programs) to allow me to state with any degree of confidence whether a particular aspect of semantic research is, in fact, applicable, or how. I therefore propose to proceed in the following manner: after this general introduction, we will discuss several different areas of research which characterize most, if not all, of current semantic thought. In each area, brief mention will be made of the potential applicability of research dealing with it, as far as I can discern it. Following the survey of the areas, we will conclude with some discussion of the possible future routes semantic research can take, and which of these is potentially most useful to bilingual education; finally, we will consider a research agenda based on this. These discussions of applicability will be brief and programmatic, since I believe the most I can do here is serve up a selection of possible applications; the major task of finding and applying them in practice rests with those concerned with bilingual education itself.

A few caveats are in order before we begin. While it is impossible to discuss semantics without discussing theories, the current state of linguistics does not make for theories which are ideal candidates for practical application, and much of the research that is directed toward upholding or attacking current theories is of practical value only because such efforts necessarily require discovery and formulation of generalizations about language which are true no matter how they are stated theoretically. These are the results that non-linguists should be interested in, but it is necessary to wade through a lot of theoretical verbiage to get to them; the theoretical frameworks are only valuable insofar as they make it easy to state the generalizations, which is not very, for the most part. Nevertheless, the results we will discuss here are artifacts of different theories, and it is useful and important to recognize how the ideas inherent in these theories led to the results; therefore, while I will not go out of my way to discuss the recent history of theoretical linguistics, I will make more than passing mention of trends which have originated for underlying theoretical reasons. This will be true especially of the newer theories which can be seen to be growing in influence in the future.

A word about the expository style: in a paper of this type, intended primarily for non-linguists, I do not think it sensible or useful to stultify the reader with jargon. This must of necessity make the paper longer than it could be to cover the same material, since the unavoidable terms must be defined in context; on the other hand, I can cover less material in the available space. Since I am one who has in the past railed at what I regard as the opaque and obfuscatory style of linguists writing about linguistics, I believe this is a fair challenge. I do not believe there is anything in semantics that is so complicated that a merely human mind cannot comprehend it, and I will proceed on that basis; the non-linguistic reader should be warned, however, that this is a viewpoint not often encountered in the literature, and he should not expect to find terms defined or presuppositions explained there. The reader well-versed in linguistics, on the other hand, will find here little that he could not already be expected to know in detail; the sole novelty I can claim in this work is the scheme of organization, which is hardly orthodox and which I expect to cause controversy among those linguists who chance across this paper. It is, I believe, defensible, and it serves its purpose in allowing me to talk about the field in some kind of order.

Since semantics encompasses a vast network of relationships among meanings of different types, which could hardly be made explicit (if at all) in a work ten or twenty times the size of this one, I will somewhat arbitrarily divide the topics I will discuss, according to the nature of the results involved, and the nature of the methods employed, into five large categories. Naturally, there is considerable overlap, and it is hard to pin down many studies as to which area they fit in. However, the purposes of the research tend to determine the method, and the applicability of the results. The five are:

I. Logical topics [attempts to discover and exploit the "natural logic" of human thought---tends to emphasize mathematical logical models and methods]

II. Lexical topics [attempts to characterize and classify words according to their meanings---tends to use combinatorial methods of some type]

III. Epistemological topics [attempts to explain the role of knowledge and beliefs in expressing meanings and understanding them---tends to use methods developed from philosophy and literature]

IV. Structural topics [attempts to integrate other types of meaning with the structures that express them---tends to use syntactic methods

V. Cultural topics [attempts to determine the role of language as the vehicle of the culture and vice versa ---tends to use methods derived from anthropology and sociology]

Many topics can be (and have been) profitably investigated from a number of these viewpoints. To take only one example, modals (e.g, *can*, *may*, *must*, *possible*, *enough*) constitute the subject matter of one form of logic ("modal logic") which is useful in semantics, but other studies have been made of their lexical, epistemological, structural, and cultural aspects. Our knowledge of modals is the result of all of these types of studies, and the same can be said for a number of other topics. The relationships of semantics to the fields of syntax and pragmatics should be clear from this schematization, particularly the last three categories, which overlap considerably. The first two can be considered "core" semantics, although there, too, syntactic and pragmatic considerations intervene.

One further classificatory scheme cuts across this categorization. Linguists are interested both in facts about individual languages and in facts about Language, common to all languages. This latter area, which is loosely termed "universals", has great relevance to linguistic theory at all levels, but its status as regards practical applications is problematical. It would seem, at first glance, that something that is true of all languages is not a thing that teachers have to be aware of, since their students, whatever language they speak, will already know it. This is certainly true of the more gross universals, such as the fact that all languages have consonants and vowels, or that all languages have nouns and verbs. However, it's not that simple in practice, since, to stay with the examples at hand, just which vowels and consonants a language has varies enormously, subject to very subtle and not at all apparent universal constraints, and just which word in a language is a noun and which is a verb is not a simple thing to determine, even though there are some universals governing that, too. Universals, then, provide a common basis for comparing and contrasting languages as to the manner in which the universals are manifested, and these can vary wildly. Thus, we will mention a number of phenomena which are universal in the abstract, but language-particular in practice, and which give rise to the type of variation we could expect to be troublesome to bilingual education. Although the ultimate goal of linguistic theory for some time has been the construction of a universal theory of Language, attempts to reach that goal have necessitated the recognition of language-specific processes through which these universals are mediated.

Finally, one note of caution. Semantics is by no means the exclusive property of linguistics. Anthropologists, philosophers, psychologists, psychiatrists, sociologists, literary critics, educators, and many others have all studied aspects of semantics from various perspectives. This work will not be touched on here except as it has affected linguistic semantics.

## I.Logical topics

Perhaps the most obvious example of the application of research in another field to linguistic semantics is the wholesale adoption of modern logic in dealing with certain linguistic problems. To a large extent, the work in this area has focussed on providing a framework for expressing the propositions that constitute what we might call the "literal" meaning of language utterances. These are seen, in some theories, as constituting the "base" of the sentence, and they are held to be processed in some fashion by the syntactic rules. The details of these and other theories are rather irrelevant here, since there is little of the formal research characteristic of this area that can conceivably have applications in the field of bilingual education, or any practical field, for that matter.

There are, however, some notions arising from logic that, while perhaps universal in some sense, are manifested in different languages in unpredictable ways, and are sufficiently important to have motivated a great deal of productive research, much of which may be applicable to educational problems. These are the three types of logical "operators" which are important to natural language (modals, negation, and quantifiers) and the concept of predication.

Modals are the first case. In English, there is a class of auxiliary verbs with unusual properties called "modal auxiliaries". Logically, these verbs (e.g, *can*, *must*, *may*, *should*, *will*, etc.) are treated as variants of the two basic operators called *possibility* and *necessity*, and indeed, there are syntactic and semantic variations in the modals which allow us to group them into these two large classes. For example, Horn (1972) has shown that there are lexical items and constructions which can only be used around modals which are in the *possible* class. For example, consider the underlined words in (13)-(15):

(13) I can *afford* it.
(14) *Anybody* can do that.
(15) She can't *tell time* yet.

As can be seen by deleting the *can*, these items depend somehow on the modal for their meaning, which is not an obvious result; and not just any modal will do---*must*, for example, produces ungrammaticality here. However, these "possible polarity items" can be used to sniff out logical modals which are not syntactic auxiliary verbs. It turns out that there are modals semantically present in many constructions where we would not expect them. For example:

(16) He's rich enough to *afford* a Rolls.
(17) She's too young to *tell time*.
(18) *Anybody* knows that Columbus discovered America.

(16)-(18) show that the constructions with *enough* and *too*, and certain uses of *know*, contain modals in some way semantically, and must be treated logically like modals. This, in turn, gives us some idea of what they mean; for instance, a reasonably good paraphrase of *enough* in (16) is: 'to a degree which makes it possible'. This allows us to explain the presence of polarity items and helps us explicate the exact meanings of numerous words and constructions.

In addition to being ubiquitous, modals are polysemous---

they have a number of meanings. In general, each modal has at least one "root" meaning, usually dealing with obligation or permission, as in:

(19) All applicants must complete the form.

(20) You may enter now.

and, in addition, an "epistemic" meaning, having to do with judgements of possibility, probability, or necessity:

(21) Harry must be home now.

(22) This may be the place.

There are logical means of handling this type of meaning difference.

Another situation which a logical approach allows us to explain is the divergent meanings of the following sentences:

(23) Harry may not be here.

(24) Harry can't be here.

Epistemic may and can (as in (23)-(24)) both mean possible, but the negation present interacts differently with each word. (23) means that it is possible that Harry is not here, while (24) means that it is not possible that Harry is here. This corresponds exactly to the logical form of these propositions:

(25) POSSIBLE (NOT (HERE (Harry))) [= (23)]

(26) NOT (POSSIBLE (HERE (Harry))) [= (24)]

As we see, negation is a topic which is dealt with in logic, and certainly it is also a relevant semantic phenomenon. Negation has been the topic of a number of studies (not all totally from the logical viewpoint) by Horn (1969, 1970, 1971, 1972, 1975), Baker (1970), Lawler (1974), and others. Its implications are large for other areas of semantics, and we will meet it again. Here we briefly treat some of its logical properties.

The basic logical use of negation is as a function changing the truth value of a proposition; that is, if a proposition P is true, then its negation NOT (P) is false, and vice versa. There are certain problems associated with applying this rationale to natural language, but we will treat this in the section on epistemological topics.

Negation, like modals, casts a "polarity" web; there are a large number of words, phrases, and constructions which are peculiar to sentences with negatives in them. For instance:

(27) Frank didn't *budge*.
(28) He didn't *ever* come
(29) He hasn't been here *in weeks*.
(30) They haven't got *a red cent*.
(31) You *need* not go alone.
(32) He didn't arrive *until noon*.

As can be seen by removing the negation, these sentences are quite anomolous in the affirmative. Like "possible-polarity" items, these "negative-polarity" items allow us to detect negatives in unsuspected places:

(33) Only Bill *ever* hands in his work on time.
(34) If you *ever* do that again, I'll report you.
(35) Did you *ever* meet Ed Jones?
(36) I'm surprised he *ever* showed up.
(37) Frank denied *ever* seeing me there.
(38) He's too dumb to *ever* suspect.

In (33) the negative polarity *ever* is conditioned by the presence of *only*, in (34) by *if*; in (35) the fact that the sentence is a *yes*/*no* question is sufficient to "trigger" the presence of *ever*. (36) contains *surprised*, which contains a weak presupposed negative, (37) has *deny*, and (38) has *too*, both of which are negative also, semantically. Thus, a reasonable paraphrase of *too* in (38) is 'to a degree which makes it not possible', parallel to that given of *enough* above (p. 9), and containing both a modal and a negative.

Negation interacts with modals in interesting ways. As we saw in (25)-(26), the placement of the negative vis-à-vis the modal is critical to the meaning. In (25), the negation is said to be "inside the scope" of the modal POSSIBLE, while in (26) the modal is inside the scope of the negation. The other logical modal, NECESSARY, interacts with negatives in a precisely complementary way:

(39) NOT (NECESSARY (P)) = POSSIBLE (NOT (P))
(40) NOT (POSSIBLE (P)) = NECESSARY (NOT (P))

That is, if something is not necessarily true, it is possibly not true, and if it is not possibly true, it is necessarily not true.

These logical relations surface in English in interesting places; consider:

(41) You must not go.

(42) You don't have to go.

(43) You may not go.

(44) You may stay.

Note that (41) does not mean the same as (42), although *must* and *have to* are virtually synonymous (the affirmatives of (41) and (42) *are* synonymous); instead, (41) means something like (43), and (42) means (44). This is predictable from the formulas (39)-(40). (41) means 'It is necessary that you not go', with *not* inside the scope of *necessary*; (42) means 'It is not necessary that you go', with the opposite configuration. Given this, we can predict that (41) will mean essentially the same as (43), which means 'It is not possible that you go', and that (42) will resemble (44), which means 'It is possible that you not go'. The interchanging of the modals interchanges the negatives as well.

A similar phenomenon exists with another class of logical entities called "quantifiers". There are two types, "universal" and "existential". These are manifested in English by the words *all*, *every*, *each* (universal), and *some*, *a* (existential). Quantifiers are also said to have "scope"; for example, the negation in (45) is inside the scope of the quantifier *some*, and that in (46) is outside the scope of the quantifier *every*:

(45) Somebody didn't leave.

(46) Not everybody left.

Note further that (45) and (46) are synonymous; this is the result of a rule of logic dealing with quantifiers and negatives, parallel to the one dealing with modals and negatives:

(47) FOR EVERY x (NOT (Px)) = NOT (FOR SOME x (Px))

(48) FOR SOME x (NOT (Px)) = NOT (FOR EVERY x (Px))

That is, if it is true of every 'x' that 'x' does not have the property *P*, then it is not true that there is some 'x' which does have the property *P* (47); and if it is true that there is some 'x' that does not have the property *P*, then it is not true that every 'x' has the property P(48). This is precisely the same type of rule that applies to modals and negatives; in fact, there are logical theories that relate NECESSARY to the universal quantifier, and POSSIBLE to the existential.

These scope relationships can cause problems; (49) is ambiguous as between (45) and (46):

(49) Everybody didn't leave.

because it is not clear whether the negative or the quantifier has outside scope. Similarly, existential and universal quantifiers together can produce ambiguities:

(50) Somebody rings my doorbell every 5 minutes;
I wish $\left\{\begin{matrix}\text{he}\\ \text{they}\end{matrix}\right\}$ would stop.

One reading of (50) has the existential outside the universal: 'There is some person such that every 5 minutes that person rings my doorbell'; this corresponds to the *he* case in the second clause of (50). The other reading (corresponding to *they* in the second clause) has the universal outside the existential: 'For every interval of 5 minutes there is some person such that that person rings my doorbell'.

There has been extensive work on quantifiers in semantics; G. Lakoff (1970, 1971). Partee (1970), Carden (1970, 1973), Heringer (1970), Jackendoff (1972), and others have contributed. Quantifiers, modals, and negatives are, as mentioned above, examples of what are called "operators" in logic; the properties and interactions of such operators in semantics is treated by McCawley (1972, to appear), Horn (1972), and numerous philosophers and logicians, among whom I might mention Hintikka (1972) and Lewis (1972).

Another logical concept of great use in semantics (and implicit in the preceding discussion) is that of "predication". One speaks of a proposition "predicating" something. This is represented logically by the distinction between a "predicate" and its "arguments" (precisely analogous to the mathematical use of "function" and "argument"). Thus the proposition 'Bill is dead' predicates deadness of Bill; this would be represented logically as a predicate (DEAD) with one argument (Bill) thus: DEAD (Bill). Propositions themselves can be arguments of other predicates; thus the proposittion 'Bill died' can be viewed as predicating occurrence on the proposition 'Bill is dead'---this is reflected logically by a combination of the inchoative predicate COME ABOUT and DEAD thus: COME ABOUT (DEAD (Bill)). There can be more than one argument;

'Bill hit John' would be represented as HIT (Bill, John). One can stack predicates almost ad lib; a sentence such as 'Bill wants to begin to learn to speak Spanish' (which is lengthy, but not overly so) would be represented as WANT (Bill, BEGIN (Bill, LEARN (Bill, SPEAK (Bill, Spanish)))). There are also sentences involving complex propositions where each predicate does not appear overtly in the sentence like this; for example, 'Frank killed Bill' can be represented as CAUSE (Frank, COME ABOUT (DEAD (Bill)))---that is, kill means 'cause to become dead' the same way die means 'become dead'. One of the more interesting theories of recent semantics is "lexical decomposition", which tries to break up predicates into more basic "atomic predicates" in complex relationships with one another. The work of Postal (1970a), McCawley (1968a, 1968b), Ross (1969, 1972, 1974), G. Lakoff (1968a, 1968b, 1971b, 1971a), and R. Lakoff (1968, 1969, 1971a), as been seminal in this field, and a host of others have contributed: Morgan (1969), Green (1969, 1971), Binnick (1969), Borkin (1972), Lawler (1972a), Rogers (1974), and Dowty (1972), to name a few.

While few now espouse lexical decomposition in its more extreme form, this research represents a great body of interesting and useful generalizations about the interrelationships of predicates with one another, and therefore of their meanings, quite independent of the theory that gave them birth.

Applications of logic per se are not easy to conceive of; but there are many notions treated in logic that are of sufficient importance to permeate the whole of semantics, like predication or negation. The research spawned by the vogue for logic in semantics can serve as a fruitful source of applications, although my judgement is that the logic boom is over for the present; while considerable research continues to be pursued, it does not seem to me to be headed in a direction which will lead to usable insights in the near future. A measure of this trend is that very few of those linguists mentioned above in connection with lexical decomposition are now engaged in logically-based research; while their work continues to provide useful generalizations and insights, it has progressed from the paradigm of logical semantics to encompass a number of other topics, many of which we consider below.

## II. Lexical topics.

This area of investigation (which, I repeat, overlaps considerably with the others) is primarily concerned with the semantics of words and morphemes (I will hereafter use "word" for both concepts). The lexicon is the place par excellence where languages differ from one another; we can then expect to find many accounts of such differences here, and also some attempts at relating the meanings of words in a language to one another, and, by means of semantic principles, to other lexicons. Educational applications should not be difficult to find.

Probably the most important single principle in this area is that meanings of words are not units; they can be "decomposed" in any of a number of ways, and there are several theories of semantics with different ideas about how to do the decomposition, and what the semantic units are that words are composed of. For our purposes, the differences among these theories can be ignored profitably. We have already referred to the theory of "lexical decomposition" of, for example, McCawley. The basic units of this theory are called "atomic predicates"---atomic because they are supposedly undecomposable, and predicates because the logical relation of predication is the principle for combining them. There should be, in this theory, a relatively small number (say, on the order of 1000 or fewer) of such predicates, but their combinations can encompass a vast number of possible lexical items. Other theories employ functionally analogous concepts, like "semantic features", which are collected in bundles according to combinatorial principles to specify the meaning of an item. We will hereafter use the term "feature" to refer to any partial specification of meaning (e.g, the English word man has the feature male).

Given that there are components to meanings, an immediate problem is to determine what they are in a given instance, and, less obviously, to choose among several possible specifications the "correct" one. To take a gross example, suppose I defined mayonnaise as "that awful stuff some cultural illiterate put on my chopped liver last week"; while this may be a true definition (and may even represent the way I think about mayonnaise), it is not too useful, unless you happened to be with me on that ghastly occasion. A more useful definition would refer to the contents of the sauce, the manner in which it is prepared, and possibly the way it is used. There are two reasons for this state of affairs, one prior and one resultant: (1) obviously, words are to be used to communicate with others in a society, and therefore must have reference to concepts which others know---personal referents are only useful to the extent that an addressee is familiar with a speaker; (2) therefore, meanings tend to be expressed and expressible in terms of other, more basic meanings, down to the level of the semantic features that cross-classify words.

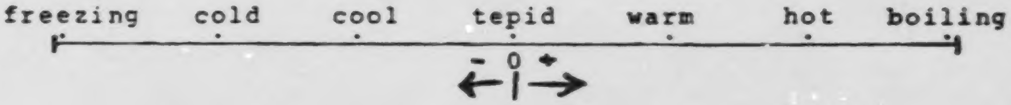
This is not a startling result---it is in fact what we would expect, and it constitutes the prior expectations of semantics. In the best of all possible worlds, human languages would have a relatively small number of semantic building blocks, obvious to all, each language could construct whatever edifices it chose to, which were not prohibited by the ways the blocks could fit together. Unfortunately, there are problems with such a model in this imperfect but interesting world.

To begin with, there is the problem of what I will call semantically insulated spaces. There appear to be sets of words referring to concepts that are common to all human languages, which seem to be defined largely or even only in terms of one another, and not in any more general terms that apply to the rest of the lexicon. Such sets constitute closed systems, and are not very susceptible to lexical definition. Examples are the sets of words denoting "deixis" discussed by Fillmore (1971a), or the Atsugewi motion terms discussed by Talmy (1975). Fillmore's work on deixis has far-reaching implications for semantics, since he is interested in determining just how much information (contextual or non-contextual) an utterrance conveys to a listener, and what is necessary on the part of the listener to understand it. For example, his discussion of the definitions of right and left shows that they cannot be satisfactorily defined in independent terms, although it is clear that one is the opposite of the other. The use of deictic expressions of place, person, time, and social usage shows that there are many items of information from the culture, or from our knowledge of the real world, that enter into the meanings, and a strictly lexical definition is not sufficient. Another case, also discussed by Fillmore (1975a) is the set of words denoting non-visible feelings. While a cut or a bruise can be pointed at, how do we know what heartburn means if we've never experienced it? Fillmore suggests that the closest we can come is "how you feel after you've had three raw onions and a large Coke"; obviously, this is not a straightforward componential definition. Note, however, that it does have a lot in common with the facetious definition of mayonnaise I gave above. There are a lot of insulated spaces in the lexicon of any language, and while many of them are susceptible to common-sense definitions like Fillmore's which appeal to universal (or near-universal) human experiences, many of them are quite culturally bound, and inaccessible to non-members of the culture. A lot of the problem in learning a language is acculturating to the point at which such words begin to make sense.

Even where a word may be susceptible to a lucid definition, however, the salient features of the definition may be quite strange. Each language has a number of ways of combining features, most using some particularly salient feature or group of features to distinguish large sets of words. Thus, sex is a fact of all human existence, and all human languages have sets of words denoting males and females. Likewise, there are kinship terms in all languages, but the features selected as salient vary widely; Norwegian distinguishes between maternal uncle (morbror) and paternal uncle (farbror), Puget Salish between older and younger siblings. Some kinship systems, notably in Australia, are elaborated to an extent which is hard for Americans to believe (let alone understand)---the fact is that the features defining relationships are salient in those cultures and not in ours. Puget Salish has a word /šəgʷɨ/ which can translate the English words road and door. This does not mean, however, that /šəgʷɨ/ means 'road or door'; it is a unified concept having to do with movement, particularly of human beings---people pass along a road and through a door, the context always disambiguates, and Puget Salish speakers feel no more need for a special word for 'door' than English speakers do for a special word for 'end of a hallway'. Contrariwise, English does not distinguish the two verbs 'drop by accident' and 'drop on purpose', which are carefully kept separate in Puget Salish; the features of responsibility and volitionality are very salient in this culture, but not (linguistically) in English.

A componential approach of any sort allows one to talk about synonymy and antonymy; there are words that seem to be the same in meaning, and there are, likewise, words that everyone knows are "opposites". Once again, however, things are not as simple as they seem. While it is fairly simple to find the opposite of good or soft, is there an opposite for cigarette, or smoke, or red? This is also a matter of salience; good and bad differ in the value of one feature only, and it is the salient one---something that is good has a "plus" value for this feature, and something bad has a "minus". But this feature is the important one for a contrast using good. There is no obvious candidate for such a salient feature in the case of, say, red, which will give a unique word when it is accorded a negative value. There are contexts in which the salience is supplied, and therefore opposites exist---in checkers, the opposite of red is obviously black---but note that the choice of the salient feature is not intrinsic to the meaning of red. A similar but far more highly elaborated system of antonymy has been described by Hale (1971) in the Walbiri language of Australia, where it is possible to find an antonym of every word in the language by systematic exploitation of the principles of cultural and semantic salience. Several other Australian languages have been profitably studied with a view to determining the salient and basic aspects of the semantic features in the lexicon; cf. Dixon (1971) and Hale (to appear). The principle of salience in antonymy also appears to explain how we understand some cases of irony, where the speaker says the opposite of what he means, but we have some clue (from intonation, facial expression, or context) that he does not mean it---in interpreting it, we must cast around for a meaning, and the closest thing in meaning to a given word or sentence is its opposite, since it differs in only one feature, and that is the salient one in the discussion; cf. Myers (1974) for discussion.

There are also problems associated with "semantic scales". hot is opposed to cold, warm to cool, boiling to freezing, but what is the opposite of tepid or lukewarm? In fact, these words are all part of a scale of temperature, with *freezing* at one end and *boiling* at the other; the other terms lie at intermediate points, and their opposites occupy corresponding points on the other side:



The reason *tepid* has no opposite is that it is the neutral "zero point", neither in the positive nor in the negative side, and thus there is no corresponding "opposite" point for it. There are a large number of words associated with scales of various sorts, and numerous semantic and syntactic effects of this state of affairs. Note the strangeness of (51):

(51) ??She's beautiful, if not pretty.

If the adjectives are interchanged, the sentence is unobjectionable. The word *absolute(ly)* is used to modify words at the extreme ends of scales; thus it is odd in (52) but fine in (53):

(52) ?*It's absolutely warm in here.

(53) It's absolutely boiling in here.

Similarly, the word *mad* in English has two meanings, 'angry' and 'insane'; the first is not at the end of a scale, but the second is, so the use of *absolutely* will disambiguate the ambiguous (54):

(54) He's mad about that. (can mean 'angry')

(55) He's absolutely mad about that. (can't mean 'angry')

In principle, we can refer to any point on a scale, and there are words which let us reach points for which there are no special words: thus, *very warm* is intermediate between *warm* and *hot*. This mobility in meaning is very useful, since it allows us to be both more and less precise at the same time; saying (56) lets us pin

(56) The room was reasonably warm.

down the temperature of the room as exactly as we need to, without the necessity of giving a thermometer reading, which would probably go beyond our available information. Studies of such scales and of semantic "fuzziness" have been made by G. Lakoff (1972a) and Horn (1972).

The nature of the items in the lexicon has so far been ignored in this review, and this is the usual treatment in semantic discussions, since the view at least since deSaussure (1922) has been that the relationship between the meaning of a form and the phonological shape it manifests is arbitrary. Recent work by Ross (1975) challenges this assumption, at least for some classes of words; there appear to be, at this very early stage of research, some unexplainable regularities in the form of words, depending on their meaning; this is particularly true of opposites, and of scalar terms, and these regularities occur across languages, not just in English or Indo-European. If Ross's hypothesis is correct, there will be unpredictable consequences in all areas of linguistics.

Antonymy, then, can be seen to be a very complex concept. Synonymy should be simpler, but this, too, will present problems. There seems to be a general principle that languages detest synonyms. If a language has a pair of synonyms (for whatever reason), the chances are they will develop different meanings, or else one of them will drop out of use. This appears to be due to a principle of economy on the part of the speakers of the language---after all, who needs two words for the same thing? Differentiation of lexical items signals difference of meaning in the overwhelming majority of cases, and a speaker of a language, presented with two putative synonyms, will try hard to find a meaning difference, and will usually succeed, even if he has to make one up. If this happens often enough, they will not remain synonyms long. Examples abound: for instance, the Norman invasion brought a plethora of French terms into English, including the French words for cow, swine, and sheep. These could not exist as synonyms, so developed the meanings of the meat derived from these animals---beef, pork, and mutton, as they have been anglicized; this is not too improbable, since the Normans probably saw the meat more often than the animals.

Another way synonymy is avoided is by the adoption of special sets of vocabulary with distinct meanings. There seem to be basic, culturally salient terms that are primes, or "prototypes". In addition to these, there are larger and smaller categories that are derived from the primes. Thus, dog is a term learned early in English, as is cat (although they are very hard to define in lexical terms, probably because they are prototypical---people know, without looking at a dictionary or a taxonomy, that a wolf or a fox is a dog and a lion or a jaguar is a cat---and they are surprised to discover that a hyena is more closely related to a cat than to a dog), but there are other terms, like Pomeranian, setter, boxer, etc. which are obviously derivative, and superordinate terms, like carnivore, which appear to be derivative also. Research on these topics has been pursued by Fillmore (1975a), Berlin and Kay (1969), and Rosch (1973).

There are also uses of words where antonymy and synonymy seem like the wrong categories to use. When one utters (57):

(57) My love is like a rose.

one is presumably making a meaningful statement about the individual denoted as "my love". But what is the statement? Does she have thorns? Is she green and thin? Does she have aphids? Does she need mulching? Obviously this is not what is intended. Metaphor such as this picks out a salient feature and posits it of both nouns---in this case, clearly, the feature is beauty.

We use metaphors constantly and are rarely misunderstood. This fact alone is staggerring, since it means that we are able to pick out precisely the salient dimensions of the metaphor and ignore the others. This must be a culturally-determined skill, since the features that determine the meanings of words and their varying degrees of salience are culturally-bound. What is even more mind-boggling is the constant use of irony and sarcasm, which consist, in large measure, in saying the opposite of what one means. We noted above that salience helps explain why this particular kind of metaphor is understandable; this does not explain, however, why it is ever used at all. Surely this is one of the most perverse ways of communicating ever conceived of, yet we do it all the time and get away with it. Myers (1974, 1975) and Cutler (1974) have worked on this problem, and have begun to explicate some of the processes.

For instance, Myers (1974) notes that (58), (59), and (60) are appropriate responses to someone's cutting in front of you on the highway without signalling, but (61) is not:

(58) I hate people who don't signal. [non-ironic]
(59) I love people who don't signal. [ironic]
(60) I love people who signal. [ironic]
(61) I hate people who signal. [inappropriate]

(58) is a literally true response (allowing for hyperbole, which is not at issue here), and is not ironic. (59) and (60) are ironic, but note that (60), with negation in the main clause and the relative,

is literally true as well (or at least as true as (58), which isn't ironic), while (59), by these standards, is false. Finally, (61), which is no more false than (59), is inappropriate as an ironic rejoinder in this situation. Apparently there are syntactic, as well as semantic and pragmatic constraints on irony.

Even when we consider all relevant syntactic and contextual variables, and when we have a reasonable breakdown of features for expressing semantically primitive meanings, there are some words that just don't seem to fit well. Fillmore (1971b) discusses criticize and accuse in this context. He notes that they both refer to some event or action which is judged by the speaker, at least, to be unpleasant, and they both refer to responsibility for the event or action. Thus:

(62) Frank accused Bill of telling Mary about it.

(63) Frank criticized Bill for telling Mary about it.

(62) and (63) can both refer to the same event of someone's telling Mary about something, and Frank's irritable outburst to Bill about it, yet native speakers will distinguish differences between the two sentences. These differences relate to a basically epistemological notion, 'presupposition', which we will discuss more in the next section. Essentially, (63) presupposes that Bill was responsible for telling Mary about it, and asserts that Frank said that this was not a good thing to do, while (62) presupposes that telling Mary was not good, and asserts that Frank said that Bill was the person responsible. criticize and accuse thus share almost the same features, but some are presupposed and some asserted, and the mix is different in each. This must also be taken into account in the lexicon.

The future of lexical semantics is not in doubt; there will be considerable activity in this area throughout the foreseeable future. However, much of the past activity in this area has not been devoted to the nature of the lexicon as such, but rather has been ancillary to the problem of specifying how some one or another theory could handle the problems posed by specific words; Horn (1969), R. Lakoff (1971b), Chafe (1970) are examples. Furthermore, with the seeming demise of generative semantics, some of the theoretical impetus may have gone out of this type of work. There are, however, new traditions appearing. Fillmore's recent work (to appear) on "frames", together with work by Rosch and Kay on prototypes, seems to augur well for the future of lexical studies, the more so since this type of research is being integrated with psychological and anthropological studies in the same areas.

Applications to education are not hard to come by, although much of the really applicable material belongs more properly in the epistemological, cultural, or structural areas, or in pragmatics. Nevertheless, it is clear that words carry more meaning, and different kinds of meaning, than the traditional word lists give them credit for. If languages are to be taught properly, and if cultural material is to be presented without skewing it, and if languages are to be adopted for teaching traditional material, then considerable attention will have to be paid to the words used and how they are used, and by whom, and to whom. There is a large amount of information available in linguistic semantics which can provide caveats and suggestions for this. Current research in lexical matters is tending to concentrate on more and more pragmatic concerns in word usage, e.g, what type of situational context tends to evoke a particular word or class of words to describe something, and contrariwise, what situations are evoked by various descriptions of the same thing. This promises to be a fruitful and exciting area of inquiry and to shed light on brand-new areas which are of great potential usefulness.

## III. Epistemological topics.

This area is not normally thought of as a unitary field in semantics, at least not in linguistic semantics, and it is definitely heterodox to include in one area all of the things I propose to discuss here. Nevertheless, a large amount of recent linguistic research has dealt with these topics, and I believe thay can profitably be viewed from a single perspective. Much of what has been done here overlaps with pragmatics, just as much of what we will discuss in the next section overlaps with syntax. This is all to the good, since it shows that linguists are not closing themselves off in hermetically-sealed arbitrary boxes.

The major feature distinguishing this area of semantics from the others is that epistemological studies tend to emphasize the linguistic expression of the beliefs of the speaker, and how he acquired them. Many of these expressions are covert, like presuppositions.

Speakers have beliefs about the world, particularly about the topic under discussion. They also have beliefs about their addressees, their relationships with them, and what the addressees themselves believe. Since one major purpose of communication is to exchange information, more specifically information which one or another partner does not already have, it follows that some provision must be made to avoid repetition of old information when it is not necessary to set the context, and to label it as old information when it is necessary.

Consequently, all languages have a number of devices which allow certain information to be either conveyed subliminally or conveyed overtly but "backgrounded" as not being the topic under discussion.

A speaker is said to presuppose a proposition if he believes it to be true, and, further, believes that his addressee believes it to be true. Naturally, there will be millions of propositions which fit this description: consider '2 + 2 = 4' for example. Only some few of them will be relevant to a given speech situation, however, and these will be the ones needed to understand the meaning of a sentence in that situation. To give an example, if someone utters (64):

(64) Bill realizes he was in the wrong.

he believes that Bill was, in fact, in the wrong, and expects his listener to, also. If he did not have this belief, he might report the situation by (65):

(65) Bill believes he was in the wrong.

One can also report someone else's lack of belief in something the speaker believes; in this case, one of the differences between presupposed and non-presupposed propositions comes to light. Consider:

(66) Bill doesn't realize he was in the wrong.

(67) Bill doesn't believe he was in the wrong.

The speaker of (66) still presupposes that Bill was in the wrong, despite the negation, which refers only to Bill's lack of apprehension of this proposition. In (67), the speaker takes no obvious position on Bill's being wrong, and Bill's position is even stronger ---he not only has no belief that he was in the wrong, he has a definite belief that he wasn't. Predicates like realize that show presupposition of their complement clauses are called "factives", and there are a number of them in every language (although it is not always easy to find a factive in one language with just the same meaning as a factive in another). They exist because it is necessary to refer to known facts in order to comment on their existence, apprehension, and effects, while still making it clear that they are known. Contrariwise, it is often necessary to refer to propositions which are not known to be true, and parallel non-factives exist for this purpose. There has been a great deal of research on factives; Kiparsky and Kiparsky (1971), Karttunen (1970, 1971, 1973), G. Lakoff (1972b) and Morgan (1973b) have commented on them at length, among others; and this is only a part of the literature on presupposition in general, represented by Horn (1969), Schmerling (1971), Lawler (1971, 1973a), Fillmore (1971c), Keenan (1971) and many more.

There are other types of presuppositions, of course. Consider (68) and (69):

(68) Nixon isn't President any more.

(69) Nixon used to be President,

Both of these sentences are true, but they have different presuppositions and assertions. If someone asserts (68) and I tell him he is wrong, I mean that Nixon is still President; if I tell someone that (69) is wrong, I mean that Nixon never was President. This is because (68) presupposes that Nixon was President at some past time and asserts that he now is not, while (69) presupposes that he isn't President and asserts that he was at some past time. Only assertions can be overtly negated; presuppositions remain presupposed. This fact is responsible for the bind one gets into in trying to answer (70):

(70) Have you stopped beating your wife?

(70) presupposes that you beat your wife at some past time, and neither a yes nor a no answer can alter the presupposition.

Presuppositions account for a large proportion of what is called "connotation"; that is, the non-literal meaning of words and sentences. Much of this has to do with presuppositions of goodness and badness; we are all familiar with the fact that firm and stubborn have the same denotation but opposite connotations---this is accounted for by presuppositions of goodness and badness, usually relative to the speaker's values.

Recent research by Gordon (1974) has demonstrated that presupposition is, in fact, a phenomenon which deals with beliefs. In a psychological study, he found that many native speakers of English accepted or spontaneously utterred sentences like (71):

(71) He knows my name is Benjy, but he's wrong.

where the use of the factive verb know should disallow the contradiction inherent in the second clause---that is, if know is factive, then the speaker should believe that his name is Benjy. Obviously, know is used here in the sense 'believe strongly', and the use of it by the speaker corresponds to the fact that the subject of know would undoubtedly use know to describe his belief. This opens the question of whether the strength of the belief conditions the possibility of the use of a factive, and what the relationship is between the strength of the speaker's belief and that of the person whose belief is being reported, if they are not identical. Much remains to be discovered here.

While presuppositions convey old information in some sense, there are also plenty of ways to convey new information. There is a branch of linguistics known as "speech acts" which is normally placed in pragmatics, but which critically deals with meaning. Philosophers such as Austin (1962), Searle (1969), and Grice (1967) and linguists such as Ross (1970), Gordon and Lakoff (1971), Sadock (1974), Davison (1973), , Cole (1975), Green (1972), and R. Lakoff (1969) have contributed to the literature. Basically, this area deals with the fact that an act of communication can be categorized as one of stating, asking, requesting, ordering, etc, and that there are immediate syntactic and semantic consequences. One of the more interesting offshoots of this research is the discovery that there exist codes for indirect speech acts. In "standard" English (72) conveys a request to pass the salt, not a question about the addressee's abilities:

(72) Can you pass the salt?

A literal answer of "yes" with no action following is apt to be treated as a joke, since the speaker will tend not to be interested in a literal answer, but in getting the salt. Very much of this is considered rude in our society. Yet there are many languages (including some dialects of English) where such indirect requests would be intepreted by a listener as a strange question, and hostility is the likely outcome when such exchanges occur in English because of language or dialect interference. Classroom situations often produce these and other misunderstandings. For instance, one of the sincerity conditions on questions is that the speaker not already know the answer---obviously, if he knows it already, he is not playing the game fairly; yet this condition is flung down and danced upon daily in American classrooms---teachers always ask questions they know the answers to. How must such a situation appear to a student from a linguistic culture without a tradition of such a language game? Probably as if the teacher is insincere, or crazy, or stupid, or any combination of the above. Such evaluations on the part of the student do not make for viable educational experiences. See Heringer (1971) for further discussion.

There are also many ways to hedge the strength of speaker beliefs. We have mentioned some of these above (p. 19). One frequent way is to take an epistemological viewpoint, quite literally, and to refer to the type of evidence which has led us to a conclusion. This can be done directly, by mentioning the evidence:

(73) I saw his car in front of his house, so
(I guess) he's home.

or by referring to the type of evidence:

(74) It looks like he's home.

or by using an "epistemic" modal:

(75) He must be home.

The epistemic modals have meanings associated with certainty, probability, and possibility, all according to the judgements of the speaker. For example:

(76) He'll be home now.

(77) He should be home now.

(78) He might be home now.

(79) He could be home now.

Even (75) and (76), which indicate strong probability and certainty, respectively, are not as strong as simple statements like (80):

(80) He's home now.

The reason for this is that as soon as the speaker refers in any way to his own opinion (instead of simply stating it), a certain amount of uncertainty is injected into the meaning---otherwise, why mention it? Anything said by a human being is his opinion, after all, so there's no need to note the fact, unless we want the listener to take special notice that it is only an opinion. R. Lakoff (1972a, 1972b) deals with this topic, and others, in some detail. There is still much to discover. Many languages codify much the same set of properties by means of what is called "mood", e.g, "subjunctive", "conditional", "optative", etc., and the syntactic and semantic details are quite complex (as they are in English).

Speaker beliefs and the speaker's understanding of listener beliefs are crucial also in the matter of reference. It would seem that a matter such as picking out the entity denoted by a noun should be easy, but language gets a lot of mileage out of nouns in interesting ways. Consider the underlined nouns in (81)-(83):

(81) I was looking for a policeman, but I couldn't find one.

(82) I was looking for a policeman, but I couldn't find him.

(83) I was looking for the policeman, but I couldn't find him.

In (81), the speaker does not have a unique policeman in mind, as shown by the pronoun one in the second clause. In (82), the speaker does have some individual in mind, and this is also true of (83). What, then, is the difference? The noun phrases in (81) and (82) are "indefinite" (they use the article a), while that in (83) is "definite" (it uses the article the). The indefinite in (81) is called "non-specific", while that in (82) is called "specific". The difference has to do with speaker beliefs. A speaker will use a non-specific indefinite when he has no individual in mind; rather, he is speaking of any individual who meets a given definition. He will use a specific indefinite when he does have an individual in mind, but does not expect the listener to. And he will use a definite when he has an individual in mind, and expects that the listener also has that individual in mind. Thus definites are often not used in a discourse until after an indefinite has been employed to introduce the individual---after that, reference may proceed by means of definites. For example, consider the following discourse:

(84) a You know how it is---when you want a policeman, you never can find one. [non-specific indefinite]

b Well, the other night I had to look for half an hour before I came on a policeman patrolling his beat. [specific indefinite]

c The policeman was a little irritated when I asked him to come with me. [definite]

[after this, the policeman would probably be referred to as he, until and unless some other male individual were introduced---then occasional references would have to be made to the policeman to keep things straight]

A meaning which has certain things in common with the non-specific indefinite is possible also with certain definite noun phrases. Consider (85):

(85) O'Ryan's murderer is insane.

On one reading of (82) [the "referential" reading] the speaker has an individual in mind, and refers to that (known) individual as O'Ryan's murderer. On the other reading [the "attributive" reading] the speaker is making a statement about whoever the murderer of O'Ryan may be, and has no individual in mind. The difference between the two has to do with whether the speaker believes a referential description of someone as O'Ryan's murderer will call to the listener's mind the same individual it does in his own---that is, whose description is it?

One last type of peculiar reference similar to these also deals with the source and communicational value of definite descriptions. In (86), there is also an ambiguity:

(86) Oedipus wanted to marry his mother.

On one reading [the "transparent" reading] Oedipus wanted to marry an individual (who happened to be his mother)---this reading happens to be true in this case, given the content of Sophocles' drama. On the other reading [the "opaque" reading] what Oedipus wanted to do was commit incest---this reading is not true. The phenomenon of opacity also has to do with whose description it is. In (86) the description of Jocasta as Oedipus's mother is the speaker's, not Oedipus's. Since want is a predicate that deals with intentions, and since intentions have to do with the subject's beliefs, there is also a reading on which the description is part of Oedipus's beliefs. Opacity is thus a function of there being a difference between the speaker and some other person whose beliefs are in question; a proof of this is the fact that there is no opacity in the first person---anyone foolish enough to utter (87) is proposing to commit incest, since the description is clearly his responsibility:

(87) I want to marry my mother.

Specificity, opacity, definiteness, and attributiveness are only a few of the topics that have been addressed by philosophers and linguists under the general heading of "reference". Some of these are: Russell (1905), Kripke (1972), Donnnellan (1972), Quine (1953, 1960), Postal (1968, 1970 , Peterson (1974), Cole (1975), Lawler (1972b, 1973a), Morgan (1975), Dryer (1975a), Nunberg and Pan (1975). The topics all center around speaker's beliefs and speaker's beliefs about other's beliefs.

In connected discourse, beliefs and knowledge regarding the material under discussion are subject to rapid change (as demonstrated trivially in (84)). We constantly learn new information, which becomes "old" by the time the next sentence is utterred, and forms a kind of "ground" for the information conveyed in succeeding sentences. The ideal of communication is to convey only and always new information, but that is not possible, since we must have a contextual matrix into which the new information fits; we have remarked this fact previously in regard to presupposition, which is largely a sentential phenomenon, but it is relevant here as well, when we deal with larger chunks of language. Every teacher of composition and rhetoric is familiar with how hard it is to write well, and how almost impossible it is to teach people to write at all, let alone well. Many of the problems have to do with clear description, but many also have to do with the transition from old to new information, and use of devices to show the relationship and relevance of one to the other. Language has a number of these, and linguistics has investigated many in an attempt to explicate discourse phenomena. There is a tendency in English, for instance, for subjects of simple sentences to be "old" infromation, while predicates and, often, other parts are new. This is not true of all languages, but all languages do have devices to distinguish old from new, and rhetorical traditions that exploit them. There are also syntactic, phonological, and pragmatic strategies to show that something unusual is going on, and that a more usual device is not being used. Consider (88)-(91):

(88) Frank killed Bill.

(89) Bill was killed by Frank.

(90) Frank killed Bill. [heavy stress on Frank]

(91) It was Frank that killed Bill.

(88) is the straightforward active sentence, suitable to a discussion of Frank, or Frank's actions, or Frank's misdeeds, etc. In other words, Frank is "old" information; his killing Bill is "new". (89)-(91) are transforms of this sentence, suitable for other contexts and discourses, where Bill's having been killed is "old", and the identity of his killer is "new". Studies on topics such as these have obvious importance for a number of educational endeavors, especially since the variety of devices used in languages is very large and few languages have anything like the same kinds of devices. Research on this topic has been pursued by Daneš (1970), Bayless and Johnson (1975), Tomlin (1975), Halliday (1967), Halliday and Hasan (1973), and Fillmore (1975b).

Numerous applications of the topics covered in this section suggest themselves. Presuppositions alone constitute a class of phenomena which can be used to advantage by teachers and writers, or can be ignored fatally by them. Speech act theory has direct implications for teaching methodology, and the phenomenon of old/new information tradeoff (also known as "topic", "focus", "theme", and several other terms) is immediately relevant to applications of teaching writing. Further, attention paid to these areas and expectable differences in students' and teachers' (and planners') belief structures can lead to avoiding a host of potential problems. Finally, I might add that if education is designed to alter (even if only in the sense of "add to") a student's beliefs, then very close attention must be paid to the linguistic ways in which such beliefs are expressed and inferred.

## IV. Structural topics.

This area of research, which has been productive in the past, in a rather limited and ancillary way, of semantic generalizations, has experienced recently a surge of interest and attention, resulting in a radiation of several principal lines of research which promise to be very fruitful. We will discuss this area from a short-term historical point of view.

The basic idea that defines (if that is the word) the structural area of semantics is that the syntactic structure of utterrances contributes to their meaning. While this is obviously true in several gross senses (a question obviously means something different from a statement, for example), it is the more subtle differences that have been of interest here. The idea has been around since at least Sapir (1921), but its full flowering had to await the detailed study of syntax that evolved in the last two decades.

The first two attempts to employ structural methods to handle semantics were Fillmore's (1968) "case grammar", and the school of "abstract syntax" (later called "generative semantics" in a revised and expanded version). The former view was not accepted as widely as the latter, although its insights continue to influence current theories. Basically, the ideas behind case grammar were that each proposition or sentence consisted of a predicate or verb, with a number of nouns associated, each in a particular role, or "case". This was an attempt to account for the semantic complexities associated with the grammatical relations "subject", "object", etc, which prior to Fillmore's work had been either assumed or ignored. Case grammar specified a variety of predication in which the verb determined the roles ("agent", "patient", "instrument", etc.) assumed by its arguments, and additional principles determined various grammatical relations. Thus, case grammar provided a way of specifying the fact that (e.g.) (92) has a subject which is an agent and an object which is a patient:

(92) Bill kicked Frank.

Case grammar in its original form has been more or less abandoned because of its inability to handle syntax to the desired degree of complexity, and because of the inevitable proliferation of ad hoc categories which were necessary to handle more and more subtle judgements about roles of nouns. Nevertheless, the lesson has been learned that a great deal about meaning can be expressed in terms of predicational structure.

Generative semantics also attempted to deal with a number of semantic notions in terms of predicational structures; we have mentioned the method of "lexical decomposition", which was extensively used to motivate abstract logical structures for words and sentences. One aspect of this variety of structural semantics is the treatment of grammatical relations in terms of predication. Generative semantics recognized the possibility of predicates with one argument or with more. There is no logical a priori restriction on how many arguments a predicate can have, but in practice, generative semantics was limited to considerations of only three classes or predicates---the so-called 1-place, 2-place, and 3-place types. Examples are (93)-(95):

(93) Bill laughed. = LAUGH (Bill) [1-place]
(94) Bill hit Frank. = HIT (Bill, Frank) [2-place]
(95) Bill gave Frank the book. = GIVE (Bill, Frank, book) [3-place]

We will readily recognize (93) as an example of an "intransitive" predicate, (94) as a "transitive", and (95) as an example of a transitive with both a "direct" and an "indirect" object (book and Frank, respectively). There is then an implicit claim in generative semantics that: (1) grammatical relations are a result of logical predication; (2) there are only three basic predicational relations; (3) predicates can be profitably classified semantically according to the grammatical relations they require. These logical-semantic notions then feed into the syntax, in this theory. A great deal of research has been done in this vein, and a number of interesting results reported (see above under lexical decomposition (p. 14) for references). A number of puzzling anomolies have also come to light, however, which have resulted in a gradual abandonment of much of generative semantics. We might characterize the present situation by saying that while the reports of the death of generative semantics are somewhat premature, it is not in good health; in fact, it is being kept alive largely from motives of nostalgia, and even this is possible only with the aid of expensive life-sustaining devices.

At the present time there are several emerging traditions that will bear watching. While they are more or less distinct, in the sense that they are called by different names and are being developed by different groups of people, they have much in common and each is influenced by developments in the others. The ones I will discuss in this section are: functional grammar, relational grammar, and cognitive grammar. A fourth tradition, non-discrete grammar, is also important in the current potpourri of developing theories, but its contributions have largely been to syntax up to now; the most significant semantic advances made in this paradigm will be discussed in the next section. Each of the first three is also primarily a syntactic system, but each has had to come to grips with a variety of semantic problems, and interesting and useful semantic insights are already forthcoming.

"Functionalism" is actually a rebirth of a tradition with quite a respectably long pedigree. As early as Sapir (1921) and Jesperson (1931), the function of syntax has been a target for research. More recently, "natural phonology" (see Bruck, Fox, & La Galy (1974)) has attempted to put phonological theory on a functional footing, and, largely as a result of the excesses of generative semantics, linguists of that school, led by Morgan (1973a) and others, have delved into the topic. This has resulted in a number of different views of what "functionalism" actually is; unlike cognitive grammar and relational grammar, there is no actual theory of functional grammar, nor is one likely to emerge soon---there are simply too many people doing research on too many topics for a concensus to surface immediately. Rather, the research is coalescing with parallel research by Kuno (1972) and others, leading to quite a respectable boom in functionalism (see Grossman, San, and Vance (1975)). This, in turn, has had the very desirable effect of letting common sense into linguistics and dispelling some large clouds of formalism. As an example of the power of functionalism, we cite Morgan's (1973a) account of "restrictive "relatives". These are the ordinary relative clauses as in (96)-(97):

(96) The woman who kicked him escaped.

(97) The man who she kicked is irritated.

What is problematic semantically about such clauses is that they are presupposed true, rather than being contingent on an assertion for their truth value. Thus (96) presupposes that there is some woman who kicked a male person (him), and (97) presupposes that there is a man who a female person (she) kicked. This is not easy to explain without reference to the function of relatives. However, as Morgan points out, if the function of a relative clause is

> "...to afford the hearer enough information to pick out some individual, then it is obviously more efficient to give a true description than a false one. The fact that the speaker uses the relative clause for this purpose is prima facie evidence that he believes it is true."

i.e, that it is presupposed.

Such appeals to communicative function have led also to a more thoroughgoing revisionism, in the shape of "cognitive grammar", as developed by G. Lakoff and Thompson (1975a, 1975b). This represents a radical departure from generative norms, in that it is a listener-based system; classical generative grammars have all been speaker-based, if only covertly. What cognitive grammar seeks to do is to account for the listener's ability to process and understand sentences presented to him in "real-time". That is, there is abundant evidence that the first parts of sentences are processed as they are heard, before the rest of the sentence is completed by the speaker; this amounts to the listener's making guesses about what is going to come next, and about the role the present part of the sentence will play, and finding out later whether these are right or wrong. The well-known "garden path phenomenon" which is operative in sentences like (98):

(98) The boat floated down the river sank.

is an illustration of this principle in action. A listener who hears (98) will assume that floated is a past tense main verb, since the active (non-causative) verb float can have boat as a subject and has a regular past tense. This assumption will be reinforced by the following prepositional phrase, since this is a typical complement for the non-causative float. Then he will hit sank, for which there is no place in the parsing he has determined; this will force him to go back and reanalyze floated as the past participle of the causative float, which can take boat as object, not subject, and which is therefore the result of a passive. But the passive marker is not there; it must have been part of a relative clause which has been reduced, producing the modifying participle. This is surely a lot of work to go through, and it entails not only a change of structure, but also an epistemological change from an assertion that the boat (without any overt cause) floated down the river to a presupposition (hence the relative clause) that someone caused the boat to be floated down the river, and an assertion that it sank. When one recognizes how much trouble a small change like adding a verb at the end of a sentence can cause, and how much mental labor (performed at breathtaking speed) it can require to correct, the impact of this phenomenon is not hard to appreciate. This type of approach is similar to (but leads to different conclusions from) research conducted by Bever, Katz, and Langendoen (in press) and others recently. It is also amenable to functional explanations, since it deals extensively with the process of communication, and such explanations (like Morgan's above) use this process as the basis for their explanations. Cognitive grammars have potentially available to them all the contextual information (syntactic, semantic, and pragmatic) the listener would use to decode the sentence at each step; thus cognitive grammar can function as one way to formally encode functional explanations.

One interesting example of such generalizations that can be explained functionally is the phenomenon of "conspiracies"; cf. Schmerling (1973), Thrasher (1974), Green (1970), Lawler (1974). A "conspiracy" is a tendency in a particular language for constructions that have little to do with one another semantically to resemble one another syntactically. The classic case is the Green conspiracy (Green (1970)):

(99) I found him alive (dead).
(100) I consider him alive (dead).
(101) Jesse shot him dead.
(102) They burned (buried, ate) her alive.
(103) The doctor declared him dead.
(104) I saw her alive last week.

Obviously, the meanings of (99)-(104) are quite different, and different syntactic processes must be invoked for each, yet they all seem to be "aimed" at a common structure of Subject-Verb-Object-Adjective, as if the syntax were conspiring to achieve such a grouping. Problems such as these are best attacked by means of a processing model like cognitive grammar, since such a model does not have to resort to devious syntactic devices to analyze sentences, but has direct access to semantic and pragmatic generalizations, unlike classical generative theories (cf. Lawler (1975b)). This allows one to take cognizance of such things as the speech situation and context, the structure of the discourse, the probable reasons for the sentence being utterred, the identity and characteristics of the speaker, etc. Cognitive grammar deals with much more than "grammar", and has the potential for being a really integrated theory of speech and language.

For instance, one of the more vexing problems in syntax and semantics lately has been the semantic correlates of syntactic processes. Borkin (1973), for example, notes that (105)-(107) are not as synonymous as they ought to be:

(105) Bill found that the chair was comfortable.
(106) Bill found the chair to be comfortable.
(107) Bill found the chair comfortable.

(107) represents a state of affairs dealing with Bill's personal experience; (106) reports Bill's experience less personally, and it is not even necessary for Bill to have seen the chair (much less sat in it) for (105) to be true. A perceptually-based cognitive strategy recently proposed by Ross and Oehrle (1975) accounts for this, and many other phenomena (including some phonological ones ---see p. 20 above), and is statable in cognitive terms.

Another emerging theory is relational grammar, currently existing in at least two versions, one attributable to Perlmutter and Postal (1974) and Johnson (1974), and the other to work by Keenan and Comrie (1972). The semantic aspects of these primarily syntactic theories include fundamental notions such as predication, grammatical relations (subject, object, indirect object), role/case structures, etc. The primary semantic value of these theories so far is that they have been forced to specify precisely the properties of the various grammatical relations, and of the different predicates they are related to. These specifications are much more detailed and useful than any prior ones; furthermore, many of the insights of case grammar have been salvaged in this theory, without the defects that marred it. Finally, there are immense potential interactions among relational grammar, cognitive grammar, functionalism, and many of the epistemological topics discussed above. Cf. Postal, Johnson, and Lakoff (1975), Lawler (1975b, 1975c, to appear), Tomlin (1975), Dryer (1975b).

The applicability of structural approaches to semantics varies considerably with the particular topic. Cognitive grammar has obvious implications that go beyond the little work that has been done so far---it is clearly necessary to discover the mechanisms by which people process and understand sentences. Relational grammar is also useful, insofar as it contributes to an understanding of this topic, and as it defines a class of universal characteristics of languages, but it is too early to tell what is going to happen here. The study of conspiracies is useful because of their seeming simplicity (which often beguiles teachers and text writers) as opposed to their semantic complexities ---Thrasher's (1974) work on fragments like (108)-(110) originally derived from the difficulty he found in teaching about them in English classes:

(108) Use your phone, ma'am?
(109) Ever in Ann Arbor, give me a ring.
(110) Been a snake, it would've bit you.

And, of course, any approach to linguistics that proposes such a reasonable paradigm as does functionalism is sure to be full of applications. This type of research, however, falls under the heading of "basic", rather than "applied", and results are unpredictable at this rather chaotic stage.

## V. Cultural topics.

This area of investigation deals with those semantic facts that are influenced by and reflect the culture of the speakers of a given language. Naturally, a language may be spoken by people in a number of different cultures---English is a good example---and there will be an enormous range of variation in dialects resulting from social, economic, and geographical factors. But this is the subject matter of other disciplines which are already represented in this volume (cf. Fasold and Scherzer). We will concern ourselves primarily with certain topics lying more directly in the semantic area.

We had occasion above (p. 17ff) to mention the concept of "salience". This is very useful in speaking about cultural matters in semantics (and is of overwhelming importance in pragmatics). In America, to take a non-linguistic example, it is entirely irrelevant which hand a person uses to perform most actions, unless some physical assymetry interferes with a convention, such as shaking hands or using a scissors. In Muslim cultures, however, it is extremely salient which hand is used for performing certain actions ---it is rude, even insulting, for instance, to give a person anything with the left hand. Such cases have linguistic analogs.

A good example is the area of taboo. English, like all languages, contains a number of words and phrases which have meanings that are tabooed in the society; for instance, there are taboo words dealing with death, elimination of body wastes, sexual activity, and religion. Americans tend to think of these as the taboo areas, but this is a cultural bias. Many cultures have no taboos on these areas, but rather on others, say, personal names, eating, ritual objects, various animals or natural phenomena, and people from these cultures, when they learn English, do not automatically absorb American attitudes toward taboos. They may (and frequently do) regard American usage of language in these areas as silly, since it tends to euphemisms.

The phenomenon of euphemism in itself needs explication. R. Lakoff (1973) distinguishes two types of euphemisms, each confined to a contextual sphere: technical and informal. These may perhaps best be illustrated by examples of their misuse outside of their appropriate context:

(111) Making number two is generally expedited by the use of large banana leaves. [in an anthropological journal]

(112) Excuse me, I have to defecate. [at a cocktail party]

There is a special class of informal euphemisms suitable for children, and a larger class used in informal conversation with non-intimates (with intimates, the taboo terms are often allowed); the formal euphemisms are suitable for technical discussions or in a formal exchange with non-intimates. In both cases the idea is to distance oneself from the taboo term, and thus from the taboo concept.

Euphemisms tend to have a short life (unlike the taboo terms themselves, which are among the most tenacious in the language---a fact which gives the lie to the idea that taboo words aren't used; if they weren't, we wouldn't have learned them, after all), since, if they are successful, they will be used often, and will gradually acquire closer reference to the taboo area, and will become taboo themselves. What we now call a toilet, for instance, was known by a number of other names previously; these became tabooed, and necessitated the introduction of the word toilet, which used to mean a washing-up; toilet is now getting too taboo to suit advertising copywriters, at least, who refer to the bathroom bowl. The room where this is located is called the bathroom, as though the primary activity performed there were bathing. Obviously, knowledge of American taboos and taboo linguistic usage, and a firm command of euphemisms (and the occasions appropriate for their use) are a necessity for people who are assimilating to American culture and language.

The converse of taboo is politeness, which has also been studied, but relatively little. The work of R. Lakoff referred to above (1973) is perhaps the most important. She develops general principles applicable to all cultures, which have the effect of being somewhat contradictory. The contradictions are resolved in different ways in different languages and cultures. One of the points she notes, for example, is that while must reports an obligation or order, and is therefore less polite than may, which expresses possibility or permission, (113) is more polite than (114), when utterred by the hostess at a party to a guest:

(113) You must try some of this cake.

(114) You may try some of this cake.

The reason is that (113) pretends that the cake would not be taken without "orders" to do so, since it is not desirable. (114), on the other hand, assumes that the guest would want some cake, and exploits the hostess's position of quasi-authority to give permission, thus elevating both the hostess and the cake, and demoting the guest. (113), while it elevates the hostess, demotes the cake (and thereby indirectly the hostess, who is responsible for it), and thus elevates the guest in esteem relative to the hostess. Such complicated make-believe is typical of politeness in all cultures, but the linguistic ways in which it is shown are widely variable. Japanese, for example, has a mechanism for doing exactly what (113) does, but it consists in overt honorific and de-honorific markers attached to the appropriate nouns, and in different choices for words. See also R. Lakoff (1972b).

Another area in which cultural attitudes are reflected in the language is in the languages used by and about members of groups that are discriminated against. The most numerous and most thoroughly integrated (and most linguistically significant) such group is women. R. Lakoff (1975) has done an extremely interesting study of women's language, and has found, not too surprisingly, that English is a male chauvinist language. A few of her results: (a) women are property, linguistically, even when their possessor is dead---one can say (115) but not (116):

(115) Mary is Sam's widow.
(116)*Sam is Mary's widower.

(b) lexical pairs of male/female terms are assymetric with the female term being derogatory in some way: bachelor/spinster, professional [doctor, lawyer, academic--male]/professional [prostitute--female], working man (*boy)/working girl (*woman), to father a child [=to impregnate a woman]/to mother a child [=to provide a child with nurturance, often to a suffocating degree.
(c) women who express themselves clearly and forcefully are characterized as "mannish", "unfeminine", and "pushy"; women who do not do so are "flighty", "scatterbrained", and "feminine"---neither type is found suitable by males for positions of responsibility.

Another way of expressing cultural and subcultural values regarding in-groups and out-groups is to speak in codes that people outside the group cannot understand, or cannot imitate. These codes may be real languages, dialects, argots, or just an exaggerated use of slang. This strategy works just as well for small, temporary groups as it does for larger, socially-defined ones. In smaller groups, one possible code is irony, which can function as a vehicle for in-group solidarity and out-group exclusion. Myers' recent work (1974, 1975) had demonstrated this nicely, and has in addition demonstrated some uses of empirical data-gathering and experimental techniques in the realm of pragmatic and semantic research.

Another approach to explicating the role of language in culture, and vice versa, is to try to develop a "cognitive map" of categorization and perception of objects and events by the speakers of a given language, using the language as data. Becker (1973), Becker & Oka (1975), Adams and Conklin(1973, to appear), Adams, Becker, and Conklin (1975), have studied Southeast Asian languages from this perspective, using classifier systems and other data, and have succeeded in making some very important contributions. Matisoff(1973, 1975) has studied similar matters in several language areas. Lawler (1973b) discusses cultural premises about work and the use of occupational generics in English. Finally, there is an extremely interesting study on American cultural values by Cooper and Ross (1975), which is an outgrowth of non-discrete linguistics, albeit tangentially. By focussing a very thorough study on a relatively unimportant English phenomenon (what the authors call "freezes", like here and there/*there and here) the authors have managed to motivate a description of American culture as it has influenced the language, and have, further, made serious suggestions for the study of cultural semantic universals. This led in turn to the implications discussed in Ross and Oehrle (1975) about the semantics of target structures, and to Ross (1975) about the structure of the lexicon. This clearly shows that non-discrete linguistics is productive in fascinating and unpredictable ways. Cf. also Ross (1974).

I would expect that cultural topics in semantics would be an extremely useful tool for education, particularly in those areas where programs are designed to deal with languages and cultures, or to free students from the shackles of their native (American) culture. Bilingual education certainly fits into this group. Exactly how this should be done is another question. The reader will have noted that the references in this section are far scantier than in others---this is largely because much less research has been done in this area by linguists. Anthropologists, sociologists, etc., have done considerable work, but the linguistic sophistication of such research is sometimes open to question, as is the nature of the conclusions, which seldom have to do with language as such. This is one area in which I would recommend much more research.

Having surveyed each area, I will conclude with some general remarks and proceed to the suggestions for further research. It is clear to me that the survey of topics given here represents no more than the tip of the iceberg; there is a great deal more to say about semantics, but time and space preclude my saying it here ---there is only so much one can do in four weeks. If I had had more time, I hope I would have written less and said more.

It may appear to someone from outside the field as if semantics is a somewhat chaotic, unsettled area---at least, I hope it does, for that is exactly what I think it is at the present time, and I would not want this review to present a false impression (or to be unrepresentative of the field it surveys by being thorough and definitive).

Finally, a word about research and research methods, before I make any proposals. Research in linguistics, particularly in semantics and its allied fields, has developed several heterodox research methods which tend to have peculiar effects when one tries to apply results to other fields. Other fields which deal with human behavior (psychology, education, sociology) have had to resort to numerical methods to state conclusions, since the data are so numerous and perverse, and represent thousands of interrelated variables. Linguistics, by and large, has not opted for such a treatment; instead, there is an implicit reliance on intuitive investigations of situational and linguistic variance; when this is done properly (and it can be learned) it results in generalizations of great explanatory power and potential usefulness, but it cannot give numerical criteria for application. It is a research of qualities, not quantities. Consequently, it is very difficult to judge whether the qualifying conditions for the application of any generalization in practice actually obtain, since they are not defined observationally, but are rather a matter of subjective judgement.

I believe this kind of incommensurability has led in the past to a lack of communication between linguists and other social scientists, and to a lack of general application of linguistic findings. This need not be the case. In the research I propose, it is important that linguists and educators work together, at least on the second and third of the major agenda items; this will allow the necessary communication of ideas and will result, if properly done, in the research being targeted exactly at usable results.

The major areas in which applications to education, specifically bilingual education, will lie are those which:

a) display the most, and the most unpredictable, variation from one language and culture to another.

b) relate most closely to the culture and unspoken values of the speakers of the language(s).

c) deal extensively with, or give promise of dealing extensively with, the intentions, beliefs, and desires of the speakers.

d) define the "universals" which allow people from one language and culture to understand, however poorly, people from others.

Let me expand on each of these. (a) is an obvious case---we must necessarily know what semantic differences there are in order to anticipate ways to deal with them. Still, in dealing with these differences, we must not fall into the trap of prediction that has discredited contrastive linguistics as a major tool of language teaching research. Room must be made for individual variation (cf. Lawler and Selinker (1971)) and situational differences. (b) is also obviously necessary. It is just those "unspoken" assumptions and values which lead to so many misunderstandings and to possible interference in learning. When what the teacher says and what the student knows are contradictory, something has to give, and neither obvious option is acceptable.

(c) is not so simple. In a way, all language deals with this; I am here, however, referring to the topics dealt with in section III, which are for the most part not obviously expressed feelings of speakers. These must be taken into account, and can, in fact, be manipulated to improve teaching, but only if the teacher knows about them. It is the non-overt thoughts of speakers that education primarily exists to change, and here is a way to get at them directly---and to allow students to as well.

(d), finally, is that which we have already to build upon. People can understand others, if they try, and if the others want to be understood and try to be. The study of universals could potentially effect a revolution in language teaching, although that is in the future. For the more complex task of bilingual education, I feel it is imperative to be able to deal not only with the ways in which languages are different, but also with those similarities that exist. Common ground is friendlier territory than terra incognita.

I have given a sketch already of where I think the field of semantics is presently headed. The topics that currently engage semanticists overlap primarily with pragmatics, which is as it should be---semantics has overlapped syntax too much in the past, and it is past time to look elsewhere. Aside from the tradition of logical research, most of what could currently be called semantics deals pretty much with the topics I have identified above as being important to bilingual education, even those which look syntactic on the surface, like cognitive grammar. While I am not in a position to predict what things will be like a few years from now, it seems clear that it will take a while for things to settle down again and for a new paradigm to be accepted. In the meantime, now is an excellent time to stimulate practically-oriented, non-dogmatic research.

I have three major points on my proposed research agenda. First in point of temporal priority is the necessity of more basic research in semantics and allied fields, and better presentation of the current state of affairs. The first point is axiomatic---without a continuing base of creative research, a field will stagnate; the second point is somewhat obscure---I refer here to the pointless obfuscation which mars the literature in so many places. This is an artifact of the theoretical preoccupation of linguists, and the necessity they feel (or felt) to deal primarily with theoretical topics to the exclusion of adequate explication of the data. This can be remedied in several ways:(a) more reviews like this should be undertaken (with drastically reduced scopes) with a view to explaining in non-technical language the findings of particular areas of linguistics. There is at present a dearth of material at the introductory level in semantics and pragmatics, but this is solely because the field changes so rapidly that theories propounded in such material date badly. Atheoretical approaches can be found which will solve this problem. The work of Fillmore, for example, or Bolinger, shows that it is possible to deal with complicated topics in an intelligent manner that is comprehensible to those outside the specialty, and to give detailed, applicable accounts of the linguistic facts. I visualize a series of papers summarizing various areas in semantics and pragmatics, presenting the data and noting the interactions fully, rather than sampling them, as I have been forced to do here. Such a series would be valuable to linguistics as well as other disciplines. A point which should be made here about the original research proposed above is that there should be a mix of empirical, data-oriented research, like Myers', as well as the more traditional intuitively-based type. This should begin to focus the results on practical problems which face educational research. (b) Another way to remedy the present situation in basic research is to conduct some inquiries into the basic semantic differences between languages, with stress on thorough investigation and explication of the semantic systems of both source and target languages. For example, a great deal of work could be done comparing and contrasting the semantic systems of Spanish and English (or, as a more extreme example, Navaho and English), without getting bogged down in theoretical points (although such studies should be quite important from a theoretical point of view). Research of this type could be targeted at showing the epistemological and cultural assumptions of speakers of the languages, and how they are expressed; specific applications to education should be easy to find in such a study. It will be important, however, in such a project, to make sure the investigators have thorough understanding both of the languages and of the relevant semantic research: many of the points that are most important, and about which the least is known, are exceedingly subtle and require a great deal of linguistic sophistication to explicate.

Second on the agenda, and hopefully benefitting from the prior art and the potential findings described under the first heading, is some serious research into the use of language in teaching. There has, of course, been considerable research into teaching methodology, but very little has been done with any sophistication in semantics or pragmatics. Before we can deal with the questions that plague bilingual education, we need to know the answers to a lot of questions about more ordinary kinds of teaching. For example, how do good teachers use various types of speech acts? What is the mix of questions to statements? How much "indirectness" is used, and what is it used for, and how efficient is it? How are presuppositions used effectively? How does vocabulary choice affect effectiveness? And what _is_ effectiveness, linguistically speaking? Many other questions spring to mind---these are just a few. In pursuing this research, it is essential, as I mentioned above, that linguists and educators work together, so that the results have some uniformity with the concepts of semantics, and so that they may be applied in the comparative studies described under the third heading. Lacking the basic grounding of data from more prosaic education, we are in a fix when it comes to bilingual education, since we don't know just what variations in language will vary from---it seems obvious there will be many effects, but until we know, say, what kinds of linguistic structures, discourse structures, speech acts, etc, are used or usable effectively in the teaching of history or reading in American schools generally, we can't say much about the effect of bilingualism on them.

Third, then, and most closely targeted, but last in terms of the prior research necessary, is a study of how language use and meaning affect the concerns of bilingual education. How much, for example, of the cultural factor in one language overlaps and/or interferes with that in another in an educational setting? How much does the fact of teaching/learning in one language, representing a different culture with different pragmatic and semantic conventions influence (or mask) the crucial motivational factors? (For instance, could motivation on the part of a student be misconstrued by the teacher as boredom, troublesomeness, or ignorance because of interference from a linguistic source?) What effect do different sets of presuppositions, discourse structures, lexical choices, etc., have on teaching and learning? How should teaching methodology be altered to capitalize on the possibilities and avoid the dangers? There are, to be sure, many questions.

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### A. Notes and abbreviations.

I will hereinafter follow the usual conventions about abbreviations that are found in linguistic literature. These abbreviate the major sources of papers in semantics. There are, to begin with, three major anthologies in the field, and several minor ones; these are:

Steinberg, D. & L. Jakobovits (eds). 1971. *Semantics: An Interdisciplinary Reader in Philosophy, Linguistics, and Psychology*. Cambridge University Press. abbreviated as *S&J*.

Fillmore, C. & D. Langendoen (eds), 1971. *Studies in Linguistic Semantics*. Holt, Rinehart, & Winston. abbreviated as *F&L*.

Davidson, D. & G. Harman (eds). 1972. *Semantics of Natural Language*. D. Reidel, Dordrecht-Holland. abbreviated as *D&H*.

Bach, E. & R. Harms (eds). 1968. *Universals in Linguistic Theory*. Holt, Rinehart, and Winston. abbreviated *B&H*.

There are also various serials which contain much useful material. Chief among these is the series of *Papers from the Regional Meetings of the Chicago Linguistic Society* (CLS). These have been held since 1965, and the *Papers* published since CLS 4 in 1968. In addition to the annual CLS volume (CLS 11 was in 1975), there are several "paravolumes"; these are issued each year since 1972, each consisting of papers on a particular topic. The ones referenced here are:

Bruck, Fox, and LaGaly (eds). *Natural Phonology*. Chicago Linguistic Society, 1974.

Grossman, San, and Vance (eds). 1975. *Functionalism*. CLS. abbreviated *FU*.

There is also a parallel series, initiated in 1975, from Cal/Berkeley, called BLS. Only one volume of this series has appeared as of the date this paper is written. Finally, there is an irregular series emanating from Berkeley called *Berkeley Studies in Syntax and Semantics*, and universally abbreviated $BS^3$; it is, unfortunately, out of print in the only volume to have come out yet.

The most common journals are:

*Language*, abbreviated *Lg*.

*Papers in Linguistics*, abbreviated *PIL*.

*Linguistic Inquiry*, abbreviated *LI*.

Finally, some of the references consist of dissertations (some unpublished), various manuscripts (MS), and working papers from various sources. A great deal of important linguistic literature is unpublished, since the field changes so often, but I have tried to keep the references, as far as possible, to things which can be found, even if only by writing to the author.

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# PRAGMATICS

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1. This is one of a set of papers intended to describe research findings in linguistics to those interested in practical issues in bilingualism. My particular task is to examine the field of pragmatics. By way of introduction I will discuss two aspects of this characterization of purpose which are likely to be problema5ic. One problem is the definition of pragmatics, since it is not a well known area of study. The second problem is the somewhat misleading implication that pragmatics is part of linguistics. In discussing these points I will be able to more accurately describe my orientation to the task.

First, I will discuss briefly the meaning of the term "pragmatics" as intended here. The historical reference usually cited in defining pragmatics is Morris (1938), where he attempts to outline a unified theoretical framework for studying the use of signs. The process of something functioning as a sign is called semiosis. This process involves three basic entities: the sign, the thing the sign refers to and the thing which interprets the sign - the interpreter. A fourth part is the effect a sign has on the interpreter, i.e. how a sign affects the behavior of an interpreter. Thus, for example, a stop sign ( a red hexagonal piece of metal with the word "stop" painted on it) refers to a prescription about the behavior of someone driving a car, and the effect of the sign on the behavior of a driver on perceiving the sign might or might not be to make him stop. The purpose of stop signs is to get people to stop, and there are social sanctions to enforce these expectations, but still people sometimes do not stop. Whether a particular driver in a particular situation stops or not is a function of his interpretation of the sign, of his evaluation of the relative costs of stopping or not stopping and possibly incurring sanction. In the function of a sign as exemplified, Morris distinguised three aspects of the process: syntax, semantics, and pragmatics. Syntax is the relation between signs. For example, "stop signs do not co-occur with stoplights nor with yield signs" is a syntactic statement. Semantics is the relation between signs and what signs refer to. For example, "stop signs mean that you should stop" is a semantic claim. Pragmatics is the relation between signs and interpreters. For example, "people usually stop at a stop sign" is a pragmatic claim.

These distinctions between syntax, semantics, and pragmatics clear enough in principle, are very hard to maintain in practice. One reason for this is that, as Morris makes very clear, and as can be surmised from the example, they refer to different aspects of the same process. In a sense, they are merely different points of view, so the same fact can sometimes be a fact from all three points of view. The difficulty becomes particularly evident when you consider an actual face to face interaction between two organisms, which is primarily what we are interested in. Two humans in conversation perform acts, verbal and non-verbal, which have sign function in sequences where each communicative act is a response, in part, to a preceding act of the other and a stimulus for his next response. As Lounsbury (1966, 408) pointed out, in these terms, semantics is "the relations between signs-as-responses and the properties of the stimulus situations which elicit them" and pragmatics is "the relations between signs-as-stimuli and the responses which they elicit." And, since syntax concerns the relationship between signs, it concerns the structure of responses and stimuli situations and thus is part of both the pragmatic and semantic relations.

Another difficulty with this definition of pragmatics is that Morris is not the only scholar nor even the first to be concerned about pragmatics, and there are substantial differences between views of scholars in various fields who are concerned about the same things, though frequently under different names. The academic fields of direct relevance include semiotics, of course, general semantics, sociology, anthropology, psychology, biology (especially ethology and ecology), philosophy, game theory, cybernetics, communications theory and rhetoric, to mention a few. It would be easy to spend the entire paper trying to find a general satisfactory definition of pragmatics, but that would not further the point much, so I propose to accept a loose definition and proceed to talk about content. I believe there is a common core in the various studies of pragmatics, namely, the function and/or use of signs in the interactions of organisms. I will take this as a working definition.

The second problem is the place of pragmatics in linguistics. The presumption in the stated purpose of this paper is that pragmatics is a part of linguistics. This may or may not be true depending on what you mean by linguistics. Many scholars who I would consider linguists in some sense have been concerned with pragmatic matters for a long time (Hymes, Pike, Sapir, Whorf, Sebeok, Lounsbury and Trager to mention a random few). However, the effect of their work on mainstream American linguistics, and the effect of pragmatics in general, has been marginal until recently. I hasten to emphasize that this is not my personal evaluation (I think it is unfortunate for mainstream American linguistics) but it is a historical fact that the function of language has pretty much been ignored (see Hymes, 1969). In the last few years this has been changing somewhat as can be seen by the titles of papers at any recent linguistics conference. The 11th Chicago Linguistic Society meeting, for example, had a special parasession on functionalism which included many papers on pragmatics (Grossman, 1975). The increased interest in pragmatics among linguists can be traced to two major sources: sociolinguistics, which will be discussed by Ralph Fasold in this symposium, and speech act theory as developed in the works of the philosophers Austin (1962), Searle (1969), and Grice (1967) and many linguists. Recent reviews of linguistic work on speech act theory is Sadok (1975) and Cole (1975) and I expect that John Lawler in his review of semantics will mention speech acts.

While I consider the interest of linguists in pragmatics to be a step in the right direction, it is for the most part very tentative and usually resorted to out of necessity for explanation of formal questions than sought after as a source of primary analysis. In other words, most linguists start with a formal problem and attempt to explain it in terms of pragmatics where necessary rather than starting with pragmatic facts and attempting to understand them in and of themselves? Because of this historical bias of linguistics I think it is more realistic and useful to look at pragmatics not as a subpart of linguistics but as a way of looking at language and human interaction. The problem with this approach is that it opens the door to all the fields mentioned above, each with an overwhelming amount of literature. Perhaps this is why most linguists have been reluctant to take this direction. None the less, I think it is useful and I have spent the last year attempting to get an overview and to cull out the research that might be of use. I cannot claim to be an expert in any other field than linguistics but I can give you a picture of the pragmatics of human language as I have encountered it.

In view of these considerations I will recast the goal of this paper as follows: I will be concerned with pragmatics in general, not just as a part of linguistics. I will take pragmatics to refer to the study of the function and/or use of signs. To narrow it somewhat I will focus on face-to-face interaction of humans and try to concentrate on verbal signs.

This has, as you may know, been the focus of most linguistic research, but it must be emphasized that it is impossible in describing actual use, to separate verbal from non-verbal signs. Also, there is not a very clear distinction between the mechanisms of human and non-human communication nor between the mechanisms of face-to-face interactions and other uses of signs, such as telephone conversation, writing, movies, art, and things like stop lights. These distinctions are primarily for expository purposes.

## 2. The Perspective of Games[3]

In this first section I will describe how signs are used to mean something and how they are interpreted as having a particular meaning. It is important to realize at the beginning that meaning does not exist in the world independent of an observer. Things that are said to "have" a meaning (sign vehicles), don't really. They are just objects, like stop signs or marks on paper or bits of cloth or paper or metal etc., or they are acts like body movements or movements of parts of the body, which may or may not make noise. When someone says something it is really just noise, unless there is someone to assign a meaning. Things are assigned meaning like people assign meaning to match sticks in an impromptu poker game. Things only have meaning by virtue of being tokens in a particular game.

It follows that human interaction mediated by signs is game playing. From this point of view what is ordinarily meant by "games", activities like chess, football, and tag, are merely more or less consciously contrived interaction activities, but not different in substantial ways from all other interactions. Most people readily accept the hypothesis that some conversational interactions are games but object to extending the hypothesis to all interactions. Perhaps, it will make this approach more palatable, if I briefly discuss the major objections before going on.

One objection goes like this: Games are not serious, they are played for fun or recreation or some other frivolous purpose. Some conversations are frivolous and playful too, and for these the concept of games is appropriate, but some conversations are very serious and important. For this type it is inappropriate. The problem with this objection is that it makes the mistaken assumption that games are not serious. Anyone who has watched a child play or watched a pro-football game or watched Bobby Fisher play chess must conclude that game playing can be very serious indeed. Thus game playing can be serious or frivolous, work or fun, unenjoyable or enjoyable. In fact, sometimes people get too serious about playing a game and have to be reminded that it is only a game, that it isn't a "real" activity. This confusion between game play and reality is, as I will discuss later, one of the basic mechanisms of socialization and hence of language use.

The second common objection is that games are competitive, involving scorekeeping and winning and though some conversations do too, (such as arguments or punning contests) some conversations (like friendly chats and inquiries about the arrival time of flight 347) do not. The problem with this objections is the assumption that games always involve winning. They do not, of course, since any game can be played more or less casually without even keeping score. The importance of winning and competitiveness is not necessarily a function of the game: almost any game, including all types of conversational interaction, can be either competitive or non-competitive. This and the previous objection become, on reflection, points of similarity rather than problems for viewing human interaction as games. There is, in fact, no clear division between "games" as they are ordinarily thought of, and other interactions.

An obviously basic part of games are the subjective attitudes of play and pretend. It is well known that play and pretend are a crucial part of ontogenetic development of humans[4], but it doesn't seem to be so widely understood that these attitudes also are crucial aspects of phylogenetic development and everyday language use. In a penetrating and provocative paper entitled "Toward [illegible] Theory of play and fantasy", Gregory Bateson (1972) discussed the role of play in language. This paper is an extremely complex and intricately interwoven argument and it has stimulated such a flurry of research in a variety of fields that I can only hit some of the highlights here[5].

The role of play in the function and development of language involves the interrelation of four concepts. The first, is that signs stand for or mean something else: A sign and the thing the sign stands for must be different types of entities. A stop sign refers to an injunction to stop, but it is a physical object not an injunction. The word "cat" refers to a cat, but it is not a cat. These are the kinds of examples usually cited to illustrate this point, but they are somewhat misleading because the act of uttering the word "cat" and the physical aspects of the stop sign do not seem to mean anything independently of their conventional significance. A very interesting problem arises when one considers the use of acts which have physiological consequences in interactions where they are not intended to have that consequence, but rather, are used as signs to refer to something else. Bateson approaches the issue from an evolutionary perspective (p. 178):

> "If we speculate about the evolution of communication, it is evident that a very important stage in this evolution occurs when the organism gradually ceases to respond quite 'automatically' to the mood-signs of another and becomes able to recognize the sign as a signal: that is, to recognize that the other individual's and its own signals are only signals, which can be trusted, distrusted, falsified, denied, amplified, corrected, and so forth."

He mentions as one example "The non-human mammal is automatically excited by the sexual odor of another; and rightly so, in as much as the secretion of that sign is an 'involuntary' mood-sign, i.e., an outwardly perceptible event which is part of the physiological process which we have called a mood." But in humans such odors can be masked by deodorants and imitated by perfumes so the olfactory response cannot be automatically acted on: odors that might have physiological implications can be used manipulatively when they are not strictly speaking true, so their significance must be interpreted and evaluated.

This introduces the second basic concept in language function, the distinction between what I will call basic and derivative meaning[6]. The simplest example of this is Bateson's discussion of monkey's at play. In their playful interaction they perform acts of a combative nature such as biting which has a basic physical meaning of hostility and agression, but they are being used to convey something else. In this situation a bite is used to represent a bite, since it is not taken to mean the same thing as a bite, even though it is in fact a bite. This contradiction is possible because they are playing, which is to say they agree, though of course not explicitly, to pretend that a bite *stands* for a bite. In other words, a bite takes on a derivative meaning as a token in the context of a game they are playing. Human language uses very subtle and intricate layerings of basic and derived meanings. I will return to elaborate this in section 2.1.

Because of this aspect of signs, there is inherent ambiguity in their use. They can be intended with their basic meaning or with their derived meaning and it is crucial for an interpreter to decide which use is intended. To aid the interpreter, acts intended to convey a message independentely of their intrinsic consequences are accompanied by other acts which convey messages about how these acts are intended. This is the third factor at work in play:

the simultaneous conveyance of two kinds of messages - messages and meta-messages or communication and meta-communication. A bite could either be hostile or friendly, so there are meta-messages accompanying the bite which say in effect "this is play". Thus, in addition to the layering of basic and derivative meanings, language use is accompanied and embedded in a matrix of meta-messages. Derivative meaning is of a logically different type from basic meaning and the meaning of meta-messages is of yet another logically different type. It is necessary to separate out these different types of meaning to make sense of any interaction, yet this is extremely difficult to keep straight in actual situations as will become clear in the elaboration in part 2.2.

Closely related to meta-communication is the concept of frames. These two notions have in fact been confused in much of the literature with the effect, I believe, of confusion in the analysis of human interaction. This notion has been the subject of a lot of recent research and has been given a variety of more or less different definitions[7]. The most general definition, and the one I will use, is that a frame is a premise about how to evaluate or identify something. It is a mental construct that categorizes the world. In section 2.3 I will discuss frames more fully, but in terms of our monkeys, the immediate relevance is that if their play sequence is successful, each of the monkeys must hold the premise that the activity they are engaged in is play. It is by reference to this premise that they evaluate the aggressive acts performed by the other as not being intended to have their intrinsic force. Notice that whether they each hold the premise "this is play" or not is a separate fact from the occurrence of meta-messages intended to convey the intention to engage in play. The distinction between meta-communication and frames is quite clear. The confusion probably results from the fact that meta-communication is about frames. Some of the consequences of this distinction will also be discussed in 2.3.

In summary then a thing or act can be used to mean something, to stand for something else, if it can be used in such a way as to suspend its intrinsic force or if it has no obvious intrinsic force. The attitude which allows it to stand for something else is play/pretend. If it is possible to use a thing or act without intending its basic meaning, it must be evaluated by an interpreter as to how it is intended: an interpreter must decide whether to take it as real or pretend. He must decide what frame to assume. Additional things or acts are used to convey meta-messages to the interpreter about which frame to invoke. In the following sections I will elaborate the concepts I have briefly introduced here.

## 2.1. More about basic and derived meanings.

As I mentioned earlier the meaning of signs in human languages is a complex layering of basic and derived meanings. There are two interrelated processes of meaningfulness at work: one is the source and nature of basic meanings, of which there are a variety, and the second is the source and nature of derived meaning. Consider, for example, the communicative gesture of shaking one's fist in a threatening manner. The threat involved in this act is due to the similarity between the gesture and an actual blow: the essence of the gesture is a presentation of the hand doubled up into a fist as it would be in administering an actual blow. 'Shaking one's fist' thus refers to a blow by virtue of similarity or analogy and derives its basic meaning from this. Now, just as a bite can convey either a basic or derived meaning, so too does this gesture have the potential of a derived meaning. In play, a threatening gesture can mean friendliness instead of hostility. Notice however that there is an important difference between the gesture and the bite. The basic meaning of a bite is what it is because of the intrinsic nature of the act and its physical consequences for the recipient. A shake of the fist however has no physical consequences for the addressee because it doesn't impinge on him physically. It's basic meaning comes from the analogical reference to an act which has intrinsic physical consequences. Thus one can distinguish two types of acts: those which have a direct physical import or force and those which refer by analogical similarity to acts with physical import or force. The use of these kinds of acts, intended to convey either their basic meaning or derived meaning, is pervasive in the interaction of all higher animals and permeates the use of human interaction including language use in the narrowest sense.

The study of these kinds of communicative acts can conviently be divided into the two areas of kinesics and par-linguistics. Kinesics is the study of body movements which are visible[8]. This includes general body placement (near or far, moving toward addressee or away) movements of hands, feet, head, and face. The other area, paralinguistics, has to do with the basic parameters of vocalization - pitch, intensity, and rhythm[9]. Generally, high pitch has basic implications of smallness, presumably because children's voices are higher pitched than adults. High pitch is then used by adults to convey implications of smallness of self, as in supplication and politeness, or to convey implications of smallness of other, as in mother to child or nurse to patient. Generally, intensity or loudness has to do with audibility: the louder the voice is, the more likely it is to be heard, the more it is a demand to be heard.. Loudness has basic implications of strength; puietness implies weakness. However, quietness can convey the derivative meaning that the speaker has so much strength that it need not be advertised by loudness.

Vocalizations of certain pitch and intensity are performed in rhythmic pulses which can vary in speed and pattern and regularity. The meaning of rhythms of speech are varied and complex. Presumably, the basic meaning of these aspects of vocalization is due to the fact that rhythm largely reflects breathing which is an aspect of ones physiological state. Rapid, irregular rhythm corresponds to rapid, irregular breathing which is due to muscular contraction, the physical correlate of anxiety. Slow, smooth, rhythm reflects slow, smooth breathing and correlates with calmness. Of course this only represents a miniscule part of the meaning of vocalization and, needless to say, these are all subject to conscious manipulation and hence to various derivative uses.

All of the preceding communicative behaviors derive their meaning and hence their force in interaction (their effect on an interpreter) by virtue of ultimate reference to some physical fact. All of these types of devices are used by higher animals though probably not with the complexity found in humans[10].

What primarily distinguishes human language, aside from simply being more complex, is the addition of another entire layer of meaningful acts whose basic meanings are not physiological but rather conventional. Here is included what is usually meant by linguists and laymen when they use the term "language": phonemes, morphemes, words and sentences are all meaningful by convention. For example, the word used to refer to a dog in English is "dog". The fact that it begins with d ends with g and has o in the middle is arbitrary. There is no connection between the meaning of the word and the shape of the word. Similarly there is no predictable connection between the shape of the sentence "The dog wants out" and the real world state of affairs the sentence refers to[11]. This arbitrary nature of the basic meaning of words and sentences is part of what makes it so difficult to learn a human language and to understand a foreign language.

One of the primary characteristics of the conventional layer of language is that its elements are discrete. A certain sound either is or is not _d_, it cannot be more or less a _d_, and a word either is "dog" or it is not. This is different from the kinesic and paralinguistic layers where a gesture or tone can vary along a continuous scale. For example, a gesture referring to blow can vary from an actual blow through degrees of less and less resemblance and still refer to a blow. Or, loudness of voice can vary along a continuous scale to be more and more demanding of attention. For this reason the conventional aspects of language have been called digital and continuously variable aspects of language analogic[12].

Having now conveniently divided these two aspects of language, I must complicate things yet further by pointing out that in fact conventionality in language extends into the analogic aspects of meaning, and analogic aspects of meaning extend into the conventional digital layer of meaning. It is not clear just how much convention plays a role in the analogic part of language, but it is clear that it does. For one thing, analogic behaviors vary from culture to culture[13]. An obvious example is that Italian's gestures are more expansive than Japanese gestures. Some cultures characteristically talk in a lower voice than others. Many stereotypical examples will no doubt occur to you. For another thing, there are many gestures which are as digital in nature as words. In English there is "giving the finger" and the circular movement of the hand with index finger extended pointing at the head meaning "he's crazy." The degree of conventionality in the analogic layer of meaning is the subject of much debate[14].

The extension of analogic meaning into the digital layer is somewhat different. It is due to the fact that analogic behaviors are prior phylogenetically and ontogenetically. A simpler way to put it is this: when a person uses any digital sign such as the sentence "The dog wants out" he must use some pitch loudness and rhythm and whichever ones are selected they will convey some analogic meanings. Moreover he must put his body some place, do something with his hands, eyes and mouth, all of which convey meaning. Thus when a digital meaning is conveyed it is necessarily accompanied by a rich variety of analogic meanings. Even when nothing is being said, that, and the deployment of the body conveys meaning anyway[15].

We haven't quite completed the picture of layerings. There is one last layer; the layer derived from basic meanings whose source of meaning is convention. The mechanism here is the same, namely using one thing to mean another by means of play/pretend, however it is much more complex because humans are capable of a much more complicated degree of substitution and pretense. In addition to the paradigm type of using acts with basic hostile meaning as tokens of friendliness there is a bewildering variety of this type and of other derivatives that don't seem to appear in other animals. There is the use of insults as compliments and the use of compliments as insults, praise to belittle and belittling to praise, requests as questions and questions as requests,etc.

These derivative uses have been extensively studied under the labels of metaphor, metonymy, synecdoche, irony, sarcasm, etc. in a literary framework. The linguistic and philosophical studies on speech act theory are about basic and derived meaning[16].

## 2.2. More about communication and meta-communication.

Meta-communication is about how to interpret communication. Usually discussions of meta-communication are restricted to messages of the type "this is play", i.e., to messages about the nature of the relationship between the speaker and addressee[17]. While this is undoubtedly important, it doesn't seem reasonable to restrict it this way. One class of messages which this excludes is messages which express the speaker's relationship to facts being communicated. Consider the following set of sentences for example.

Harry is in Chicago.
I think Harry is in Chicago.
Harry is probably in Chicago.
I think Harry is probably in Chicago.
I know Harry is in Chicago.
I guess Harry is in Chicago.
I would guess Harry is in Chicago.

The first simply conveys a message, but by comparison, in the others there is additional material which qualifies that message in terms of the speaker's certainty of the truth of the message. The additional verbiage serves the function of telling the addressee how to take the basic message. It conveys a message about a message and is therefore of a logically higher order. It is meta-communication.

Another set of meta-communications have been called meta-linguistic. This whole paper is meta-linguistic. (The preceding comment is meta-meta-linguistic). When one comments on a word as in "I said 'cat' not 'hot'", it is meta-linguistic. Many intonation patterns are meta-linguistic. For example, when contrastive intonation is put on the word "Mary" in the sentence "Mary didn't hit Bill" it conveys the meta-message, "I am assuming that the rest of the sentence is true and asserting that the contrastively stressed part is not true." But this type of sentence can only be used reasonably if someone had previously claimed that Mary had hit Bill.

The effect of the contrastive intonation then, is to contradict someone and this, in turn, has implications for the relationship between the speaker and addressee. A moments consideration should convince you that , in fact, all of the examples mentioned above have implications for the relationship between speaker and addressee and are thus meta-communicative about the relationship between speaker and addressee. This convoluted nature of meta-messages and their incredible variety makes it very difficult to talk about. As far as I know no one has tried to systematically sort out these complexities.

Even if we restrict ourselves to meta-communication that is directly about the relationship between the speaker and addressee it is exceedingly complex. There are at least two sources of complexity. One is the fact that that sort of message is rarely explicit. It is possible, of course, to say "I'm playing" or "I'm superior to you" or "We are intimate", etc. but it is relatively unusual. These messages are usually conveyed most directly by intonation, eye contact, facial expression, body movement and gestures. This causes problems because these things are inherently difficult to describe since they are continuous and analogically meaningful. Everyone has probably had the experience of objecting to someone's intonation ("Don't use that tone of voice with me") or objecting to someone's facial expression ("What did you look at me like that for?") only to be confronted with the hopeless demand to describe it ("What tone of voice?"). Experts have not really been very successful either[18].

The second problem is with the logical ranking of communication and meta-communication. The presumption I have given is that meta-communication is about communication, that it encompasses and qualifies communication, and is therefore of a higher logical type. The problem is that just as messages can be false or not intended, as a bite is not intended in play, meta-messages can be false. If monkeys are exchanging aggressive acts which are accompanied by meta-messages which mean "this is play" and if the aggressive acts are taken as play, everything works fine. But if one monkey bites too hard, the other might question the truth of the meta-message and go on to conclude that the meta-message is false and interpret the aggressive acts as aggressive acts. Similar things happen in human interaction. When someone smiles and speaks in a soft voice they are conveying the meta-message "this is friendly", but if the message is "I'm gonna' get you. I don't care how long it takes. I'm gonna' destroy you", you might be inclined to doubt the meta-message. In this kind of situation the message qualifies the meta-message, so it is in some sense meta to the meta-message.

This kind of communication, where there is a contradiction between logically different types of messages is not uncommon. It is present in all humor and is a major strategy of manipulation and control in interpersonal interaction. With certain additional situational factors this kind of communication imposes a "double-bind" on the addressee, which means that he cannot respond satisfactorily, because each of the conflicting messages calls for a different response but it is only possible in fact to respond one way. Paradoxical communication has been extensively studied in psychiatry and psychotherapy because it is believed that such communication is part of the cause of schizophrenia and other mental disorders and that is a critical part of therapeutic change and problem solving in general[19].

2.3 More About Frames. As I said earlier frames are premises about how to evaluate the world. There are a wide variety of types of frames, so perhaps I can describe the idea best by discussing some examples. A concrete example, discussed by Bateson, which probably is the source of the name, is a picture frame. It is a sign which conveys the message that the subject enclosed in the frame is to be evaluated differently from things outside, specifically, it is to be evaluated as a work of art. This example illustrates well the confusion in terminology which is possible. There are three different things here that can be and have been referred to as frames. One is the physical thing made of wood or metal. The second is the message it is intended to convey. The third is the corresponding premise made by an observer. The latter distinction is not particularly clear in this example, which is why it is susceptible to confusion, but it is obvious that much of modern art is a play on this premise and that many observers, who know the message of picture frames, do not adopt the corresponding premise.

A more relevant analogue is the logical concept of sets, which categorize objects as either being a member or not. The premise that a certain interaction is play is a frame which encloses the acts performed in a set and leads to a particular interpretation of their significance. Frames of the type "this is play" have been studied under different names in different fields: "definition of the situation," "universe of discourse", and "context", to name a few. I will return to this type of frame shortly.

The meaning of words can be thought of as frames.[20] The words "tree", "shrub", "bush", etc. correspond to a set of frames by which English speakers categorize big plants. "Run", "walk", "jog", etc. are frames that categorize human locomotion. It is important to realize that categories like this do not exist in the world. They exist in language, are learned in learning language, and are imposed on the world by language users. Because of this, different languages have different systems of categorization, different frames, and they cannot be translated except if they happen to coincide.

The sound systems of languages consist of conceptual entities that have traditionally been called phonemes. Phonemes are a kind of frame by which languages and language users categorize the sounds which are used. Phonemes do not exist in the world either, except insofar as they ~~e~~affect the performance and response of people to sound. English speakers, for example, distinguish the vowel sounds in "eat" and "it" because they learn seperate frames for them, but Eskimos and Spanish speakers have only one frame which includes both of these sounds so they do not notice the difference. As a result of the fact that different languages have different phoneme frames, people categorize the sounds of another language incorrectly and produce the sounds of another language incorrectly.[20a]

Anthropologists have attempted to talk about basic aspects of culture in terms of cultural premises. These are very general premises about how people relate to each other and the world and about the nature of the world. The American idea that all people are equal is a cultural premise. Beliefs about whether the world is lawful or random, hostile and unfriendly or nurturant and warm etc. are premises. They are yet another type of frame and of course they are different for different languages and cultures.[21]

There are many types of frames beyond and between these examples but this gives you an idea of the breadth and general nature of the concept. Frames are assumptions about how to categorize the world. They do not exist in the world except that people's thinking they exist affects their behavior. They exist in the medium of language and are learned via language and vary from language to language.

A very important aspect of frames that is probably not as obvious as these is that they are normative.[22] This can be described from two different perspectives but they really amount to the same thing. With respect to things as opposed to acts, those which fit in a category, do so more or less. The category or frame is felt to be discrete, but some objects are considered to be central, some marginal, and for some it might not be clear whether they belong in the category at all. Take the category of chairs for example. Many things are clearly chairs but lots of modern plastic devices for sitting on are more marginal (one would be inclined to describe one as a "sort of chair"). There is a popular kind of sitting device going around now which is like a huge bean-bag. It is doubtful whether you could get away with calling these things "chairs" at all. Frames are necessarily normative when imposed on the world, because they categorize classes of objects which vary continuously.

With respect to acts as opposed to things, frames work the same way but an additional complication becomes more evident. Consider the act of pronouncing the word "chair" for example. Each pronunciation differs more or less from the others; taking the whole class of variants there would be a substantial amount of difference. Now, each person has a frame (or a set of frames) for the pronunciation of each word. With the word "chair" for example, just as with the categorization of objects, people categorize pronunciations as being central, marginal or of dubious membership. For another example, consider a definition-of-the-situation frame. The class of acts that could possibly take place in a situation is obviously large and varied, but in actual situations they are categorized by some definition of the situation frame. Take the frame "this is a high class tea party" as a particular example. When a person imposes this frame on a sequence of acts, the acts are categorized as being central, marginal or of dubious membership. Uttering the sentence "Reverend Weems certainly gave a lovely sermon yesterday" would probably be a central act in this frame, "Whew! Its hot in here" more marginal, and "Wow something stinks! Who cut one?" of dubious membership.

The additional complication is particularly clear in this last example: The expected response to a marginal act is some kind of sanction. Frames are thus normative in the way they classify things and acts and,also,normative in a prescriptive sense. People tend to feel uncomfortable when confronted with an object or act which doesn't fit well into the frame they want it to so they evaluate the object or act as inappropriate, or irrelevant, or impolite, or odd, or incorrect. This is not only true of inappropriate remarks at a tea party, but it holds for marginal pronunciation of a word and for all acts. It is also true for the categorization of things, though it is often not so obvious. With the example of the categorization of chairs, when confronted with a marginal chair many people respond in the same way, i.e. with evaluations that it is an inappropriate chair or perhaps not really a chair at all. Another way to say this is that frames set up expectations or predictions and unfulfilled expectations or incorrect predictions are often met with denial and rejection

This response to marginal acts or things is not the only possible one. In fact the evaluation that something is inappropriate or odd is itself the imposition of a frame. An obvious alternative frame that can be imposed on marginal or deviant things is the creative frame. In the evaluation of deviant chairs, many people impose this frame, which is equivalent in some sense to stretching their chair frame. That is, of course, the intention of people who create marginal chairs. This normative aspect of frames, the performance of marginal or deviant acts or creation of deviant things and the frames that are imposed on deviance goes right to the heart of language use and human interaction in general. In section 4. I will try to give you a somewhat fuller idea of this function.

I would like to turn now to definition of the situation frames or, in terms more appropriate to the framework I have developed here, game frames. My presumption is that the definition of a situation which people impose on an actual encounter is a frame and that the frame consists of the same elements as a game. Following is a list of some of the structural elements of games as adapted from Redl (1971) and Avedon (1971). It is not intended to be definitive: Some categories are incoherent and overlapping and it is incomplete. It should be taken rather as suggesting aspects of language use to be focused on and consequently, as a sort of research proposal. I will leave the implications of most of these topics for your imagination, but to illustrate the kinds of inroads to language use possible from this persepctive I will amplify two specific elements.

1. Body contact. Extent and type of direct body contact permitted as opposed to indirect contact via props.
2. Body activity. Extent and type of movement required and extent and type of incidental movement permitted. What is incidental movement depends on the game, but sighs, yawns, fidgeting, pacing etc. are often incidental, though of course they may sometimes be part of the game.
3. Competition and cooperation. These two are always interrelated, since it is impossible to compete with someone without their cooperation. Games vary as to the importance of winning or losing, whether competition is goal-directed or opponent-directed, and whether the competition is for self-enhancement or defeat of the other.
4. Physical setting or context. Games differ as to requirements of arena; whether there is an audience or not, boundaries and

taboo areas within the arena.

5. Time. Some games have a well-defined beginning and end, others do not. Some games have well-defined internal transition phases (innings or quarters), some are more amorphous.
6. Props. Some games use goal and boundary props (meta-props) like hoops and nets and boundary markers. Most games use play props (balls, bats, etc.), but they vary alot as to complexity of props, variability permitted in props, and rules of usage.
7. Roles. Games differ in degree of differentiation of roles, possibilities of reversal or exchange of roles, and specific nature of roles. (power-dependence, leader-follower, team or coalition membership, number of players required, etc.)
8. Score-keeping. Games can have more or less overt score-keeping and definition of winning and associated rules of legal progress vs. out of bounds progress, set-backs due to violation, etc.
9. Pay-off. Winning or losing can involve gain or loss of valuable objects, gain or loss of face with implications of adequacy or inadequacy. It can involve gain or loss of valuable relationships or beliefs or perceptions of self and the world.
10. Spread of winnership. In some games there are only winners and losers while in others there are first, second, and third place. In some everyone can win or only one person

or a team. In some all win but the loser (scapegoating).

11. Interpretation and enforcement of rules. In some games there are referees or judges to interpret rules. In others the players do it themselves. There are variations in procedures for determining penalties and in the nature of penalties. Some penalties have consequences in the game itself, such as loss of points, and some take place outside the game, as for example fines and acts of retribution, some penalties require suspension of the game, as for example to allow for an apology or slap on the hand. Often penalties are incidental to the progress of the game as when a referee, or someone who takes on that responsibility, makes an appropriate face or shakes a finger admonishingly at the violater.

12. Institutionalized cheating. Many games allow or acturlly require cheating, lying, bluffing, deliberate misleading, sneaking, or stealing.

Most of these points have been researched in linguistics or some other field, though usually in a somewhat different framework, but I will only have time to illustrate a couple here. One is the rules of turntaking. Alot of research has been done on related topics but a more common way of referring to the general topic is in terms of structural units of interaction or discourse.[23] A conversation is a unit of interaction which is part of the relationship between the participants which is itself a unit. Conversations in turn consist of smaller units, perhaps themes or topics. These consist of smaller units and so on down to specific exchanges. In a two-person conversation ordinarily each specific exchange consists of a turn for each participant and when and how turns are taken is governed by rules of turn-taking just as in ping-pong or football. An approach to analysis of turn-taking that I find particularly interesting is in Duncan (1973). He outlines a turn system which consists of four possible states for two participants A and B: A is speaker and B auditor, B is speaker and A is auditor, both are speakers or both are auditors. The speaker is said to have the turn, but while A has the turn B is not dormant. The auditor may perform at least two classes of communicative acts: back-channel signals and signals for claiming the turn. Back-channel signals are things like head nods and shakes, brief requests for clarification, brief verbal agreement line "m-hm", "yeah" and "right". The speaker engages in signals which offer the turn to the auditor, signals which suppress a turn claim by the auditor and signals which are part of his official turn. Thus the communicative acts involved in performing one's turn are embedded in a matrix of communicative acts having to do with offering and taking of turns.

Although it is permitted for both participants to be actually talking at the same time, with the auditor's talk as back-channel, it is a violation of the rules for both to be taking the turn at the same time. If this happens they must engage in referee work, deciding what game they are playing, and what the turn-taking rules in that game are, and determining whose turn it is rightfully or they might engage in a struggle over who is to be referee. No sense what so ever could be made of any such interaction without the distinction between talking simultaneously and claiming the turn simultaneously and talking about claiming the turn or, in other words, between playing a game and talking about playing a game. This is why it is crucial to analyse interaction in terms of game-frames as opposed to simply looking at actual utterances and other communicative acts. People's use of signals and their response to signals is a function of what they think they are doing.

The second specific example of the structural elements of game-frames, I will discuss is incidental prop play. This idea was suggested by a comment in Redl (1971) about how some props "'ask for' a certain non-game use" like "the ping-pong paddle which impulsive children invariably beat on the table while playing." There are a huge variety of props used in games, of course, but of most relevance here is the use of language. Sentences and words function as props in games. They are like chips in a poker game or a ball thrown back and forth or a bean bag used to make contact at a distance. As with all props, the appropriatness of particular sentences or words is a function of the game being played. And certain sentences or words in certain games can legally be used in incidental side play. Some language props invite side play in the same sense as ping-pong paddles do. For example, certain words, like cock, Dick, ass, but and the name of the letter of the alphabet after "o", even when used in a totally non-obscene game seem to invite incidental remarks or snickers from impulsive youngsters and those of like mind. Among adults the same thing happens only it is called "double entendre." Similarly, errors in pronunciation, odd usages of a word or an unusual syntactic construction can be the subject of side play, especially among linguists. Puns and other clever constructions are often incidental side-play. There are many more kinds of incidental prop play but I think this is enough to give you the idea, so that I can go on a little deeper.[24]

One of the basic ideas in Stephen Potter's work on gamesmanship is the use of legitimate or at least acceptable incidental side play as manipulative maneuvers in games.[25] Banging a ping-pong paddle on the table could be tried (it probably has) as such a maneuver to distract one's opponent and unnerve him so as to gain advantage but it would probably be considered illegal. Slightly more subtle types of side play might work quite well though. One suggestion is to develop a wild flip of the paddle into the air with perhaps a half twist so that the other side of the paddle would come to the front. This could then be used each time the opponent scored a point, with some dumb comment to that effect, such as "Oh-oh! Time to turn a fresh face to the wind" monotonously repeated. It wouldn't hurt if the flip had some suggestion of possibly breaking a light or perhaps striking an innocent bystander. This would not technically be against the rules.

In a completely analogous way seemingly incidental side play can be used manipulatively in conversational interactions. Puns and humorous play on words and flowery or excessively complex expressions can be used incidentally in order to distract the listner. Incidental intellectualism is sometimes at work in the use of obscure or erudite words (obfuscate, adumbrate, germane) to confuse and gain advantage over the listener. Foreign expressions can be used the same way.

Unusual speech mannerisms or errors can be manipulative prop play too. In terms of speech production, Moses (1954) has an extensive discussion of the manipulative use of unusual speech mannerism. For example stuttering makes the listener uncomfortable and forces him to wait anxiously for the stutterer to get to the point. Stuttering is a strategy for "getting at" the listener. It is a safe way to express aggression, unnerve and confuse, and gain sympathy for advantage in the interaction.

The following example illustrates another kind of strategic use of incidental prop play, from Soskin (1963), a transcript of the recorded conversation of a young married couple on vacation.

Roz: Jock!
Jock: What?
Roz: (angrily) What did you do that for?
Jock: Do what?
Roz: Drop that door on me?
Jock: (Gruff, but amused) Oh, I pick up doors all the time...pick up doors all the time and drop them upon you.

They had just gone thru a door way and Jock let the door slam on Roz. She calls his name, presumably with accusatory intonation, as a demand for some kind of restitution. He avoids the force of her request by pretending that he doesn't understand and asks for clarification which she provides. Then he still pretends to not understand so she gets more explicit. At this point it is so clear what she is getting at that he can no longer safely feign lack of understanding so he switches strategy. He exploits her unusual use of the word "drop" to engage in some incidental-appearing side play which has the effect of continuing to deflect her request. Potter discusses many examples of the strategic use of incidental prop play in his later work on conversational interaction.

It would be possible to go on at great length about either turn-taking or prop-play or any of the other structural elements of games. Unfortunately there isn't time here. I want to move on to a final aspect of frames, namely the question of how people decide which frame to impose on an interaction. In outline the process is fairly simple, though in detail it is extremely complex. There are three determinants to the selection process. First, the selection is from among a limited set of game frames which people learn as part of learning language and how to use it. The frame a person decides to assume for a particular interaction is a function of his particular repertoire. Second, the frame is selected from his repertoire which is consistent with the behavior of participants and physical context. The third factor is frequently over-looked by linguists.[26] It is that the selection of a frame is to some extent influenced by prior interaction with the particular individuals involved. People make assumptions about what games others tend to engage in, then in future encounters they impose game frames on the basis of those assumptions. In many instances the frame is imposed so rapidly that it is clear that the decision has little to do with the actual behavior of participants in the immediate situation. In fact it is often the case that frames that are selected on this basis are not merely independent of immediate behavior of others but are inconsistent with their immediate behavior. This is frequently the source of misunderstanding and confusion in interaction, and when carried to extremes is considered pathological.

Related to this is a process of frame selection where there is no prior interaction with a particular individual, but a person decides that one individual is the same, in some critical sense, as another he has encountered previously or is a member of a class of people about which he has made assumptions concerning the frames to employ. These evaluations classify individuals and are thus frames themselves. This kind of framing and the associated process of game frame selection has been studied in psychiatry as transference and in a sociological framework as stereotyping.

2.4 I will conclude this discussion of the game perspective on language use with some brief observations about play. First, as I mentioned at the beginning of section 2, people sometimes get confused in playing ordinary games like football or poker and forget that they are "merely" playing. They have to be reminded that "this is only a game." This confusion is at the center of language use because one of the main functions of language is to substitute inconsequential acts for acts which have real consequences in order to distance interaction. This allows conflict to be dealt with without actual battle. It allows symbolic gratification of desires which could only be met at the expense of the well-being of others and which would ultimately be harmful for society. This in turn is made possible because people believe symbolic interaction is real, and to the extent that people believe it is real, it has real consequences for their behavior. The process of learning a language and learning to use it properly is a process of learning what to pretend about, pretending, and then forgetting that one is pretending. The force of language in social interaction is entirely a function of play and pretend.[27]

Second, it might be thought that there is an unpleasant ring of cynicism in the claim that people always play games. It seems to have the implication that symbolic interaction is always unreal and phoney. I am not clear about how true this implication is, but there are a couple or rays of light. The fact is that play is not dishonest if the participants know they are playing. It is my impression that, paradoxically enough, playful interaction sometimes seems to be the most real kind. Furthermore, play is one of the most enjoyable things to do, so why should it be unpleasant if people are always playing. There is a very interesting discussion of this problem (if it is one) in Watts (1961) and a related discussion of frames as "The Manure of Experience" in Trungpa (1969).

3. The Perspective of Exchange.[28] I had intended at the beginning to spend equal time on each of these three perspectives but it took much longer even to outline the game perspective than I anticipated. I think it is still worthwhile trying to convey a general idea of these other two and to give some references you can pursue.

The exchange perspective on language use is based on the obvious fact that language is the medium by which goods and services are acquired. This includes not only physical goods and services such as food, shelter, and warmth but also social processes like procreation and socialization. Many required goods are not only acquired by language use, but exist in the symbolic medium of language. This includes symbolic tokens of relationship by which people develop a perception of self and others and the nature of their relationship with others[29]. In these terms, the definition of relationships is the extent and types of things (I intend "things" here and following to include both physical and symbolic things) which can be exchanged. The relationship between a butcher and customer is one in which the former will exchange meat for money from the latter. If the relationship is slightly more friendly, it might also include the exchange of pleasantries. In some relationships, one can exchange only work-related messages, in some only messages about children. In intimate long-term relationships it is much more complicated of course, but a description in terms of exchange is still not only possible, but enlightening.

Relationships are the sources and channels by which things are acquired. To get things one must be in relationships and must have sufficient control over them to insure the flow of necessary or desirable things. The more control one has, the more things one can get, or, contrariwise, the more things one can get the more control one has. Obviously, control of relationships is a central aspect of acquisition, and so a central aspect of language use is how control is exercized. I have found two approaches to control which are particularly promising. Both presuppose game playing and the associated exploitation of rules, obligations, duties, expectations, etc. From this point of view, language is used to negotiate relationships, to set up trades, to incur debts and build up credits, to invoke moral obligations, to build up and exploit guilt, etc. No one I know of has examined how language itself works in this view of interaction, but there are at least two kinds of analyses of interaction in these terms. One is the rather extensive work in transactional analysis.[30] The other is anthropological studies on reciprocity.[31] Both of these areas of study are rich in provocative suggestions for the analysis of language function.

4. The Perspective of Deviance. It is impossible to overestimate the importance of deviance in language use. The actual functioning of language is an intricate interplay (literally) of rules and the violation of rules, of expectations and the frustration of expectation, of frames and the breaking of frames.[32] The myriad plays on basic and derived meaning I mentioned in section 2.1 are examples of this. Metaphor is deviant use: "His face was a ripe peach" is a weird thing to mean literally, and it is because of this fact that one would assume it was not meant literally and would search for a derivative meaning that might make sense. Even ordinary sentences like, "Can you pass the salt?" are deviant: Literally it asks if the addressee is capable of transferring a small object across the table, which is odd unless one is addressing an invalid.[33] This oddness induces the addressee to search for a derivative meaning which makes sense, hence the inference that it is a request to pass the salt. An impressive general outline of this process is in Fonagy (1971).

Another way of looking at the same function of deviance in language use is in terms of the interplay of society and the individual, of the past and the present, of convention and spontaneity.[34] A convention, from the point of view of an individual, is a given. It is something that was established before and independent of any particular individual. Therefore when one is acting out a conventional role, or using a word or sentence in its conventional way one is acting out a script that was written in the past by others. One is not expressing himself as an individual, but rather himself as someone who knows how to perform the roles and use the words and sentences as they were prescribed by society, i.e., he is expressing his social existence. The present and the uniqueness of an individual in the present can only be expressed by deviance. This creative function of deviance as an expression of individuality and nowness is manifest in metaphor, poetry, and art in general, and in the spontaneous creation of unique indirect speech acts in everyday language use.

An issue that is always in the air in a discussion of deviance is the connotation from its ordinary usage of badness or turpitude. I feel I should comment on this part of deviance but it is a very murky issue. In many contexts an attempt is made to distinguish between a good kind of deviance (creativity) and a bad kind of deviance (pathology).[35] A third class also exists, namely deviance due to ignorance. This latter class would include children and foreigners who don't know how they should act in general, and on a smaller scale those who don't know how to act in a particular situation o class of situations. With very gross deviations, it appears to be easy to maintain these distinctions but in particular instance which are not so gross it is impossible. It is often impossible to tell whether a deviant act is bad or ignorant, as in Jock's non-compliance with a request for an apology in the example of prop-play. It is often impossible to distinguish between the ramblings of a schizophrenic and a poem. Furthermore, it is possible for a society to be pathological, so that even deviation which is regarded as gross in such a society might be good deviation from an objective point of view.[36]

Finally, I would like to emphasize the value of deviance in the analysis of language. I have heard several linguists observe, though I don't know who to attribute it to originally, that Chomsky's most valuable contribution to linguistics is the introduction of the use of deviant sentences to determine syntactic rules. His famous example is "Colorless green ideas sleep furiously." Generative linguists have generalized the principle and have used deviant examples to infer rules in phonology, semantics, and recently in pragmatics, as well as syntax. The explanation for its usefulness is that a deviant act marks the limits of the rule it is a deviation from. Bateson (1970) discusses this phenomenon in more general terms: "... information about shape is aggregated at boundaries, and ... the inside of a homogeneous set contains no information except the repeated affirmation of homogeneity." (p. 67). If deviance is a valuable tool for linguistics, then linguists should make use of the extensive data and analysis of deviance that is available in psychopathological literature.

# NOTES

[1a] A number of people have helped me work this stuff out: Pete Becker, Ann Borkin, Jeff Dreyfuss, Mişa Cain, John Lawler, Nancy Gordon, Ken Pike, and students and hangers-on in a course on pragmatics.

[b] In giving references, I have not tried to be definitive and complete but rather cited general, basic works where possible.

[c] The best basic discussion of pragmatics, in my opinion, is Watzlawick, et al. (1967). The most detailed, comprehensive work is Pike (1967). It is also an extremely valuable source for references. I will not make a particular attempt to cite all places where Pike's work is relevant. It would be redundant because it is of relevance almost every place.

[2] Hymes (1969) makes this claim too. There are many exceptions recently, for example, the recent work of Robin Lakoff and Charles Fillmore cited in the references.

[3] This point of view has been taken by a great many scholars in a wide variety of fields: Avedon and Sutton-Smith (1971), Buchler and Nutini (1969), Ehrmann (1968), Pike (1967), Potter (1970), Rapoport (1960), Watts (1961), Wittgenstein (1967) to mention a various though far from complete list.

[4] Piaget (1962).

[5] See references p. 41 in Goffman (1974). Also the work of Haley, Laing, Ruesch, and Watzlawick and others cited by them follows from Bateson's work on play and fantasy.

[6] See detailed discussion in Chapter 3 of Goffman (1974).

[7] Bateson in his article on play and fantasy calls meta-communications frames. Also Watzlawick (1967) confuses them.

[8] Birdwhistell (1970), Ekman (1973), Knapp (1972).

[9] Trager (1958) is an attempt to categorize the dimensions of paralinguistics. Moses (1954) is an excellent discussion of deviant use of paralinguistics. Fonagy (1971) discusses its role in creativity and language change.

[10] See however Trivers (1971) for some complexity.

[11] The arbitrariness of the form of words has been the subject of extensive debate for a long time. Recent work by J.R. Ross is interesting.

[12] Watzlawick (1967) has a good discussion of this distinction.

[13] The existence of bee dialects (Lindauer, 1971) makes this argument hard to evaluate.

[14] Extensive discussions of this issue are found in Knapp (1972) and Ekman (1973).

[15] See Watzlawick (1967) Chapter 1 on the impossibility of not communicating.

[16] See papers in Cole (1975) and Corum (1973), Grossman (1975 and 1975a), R. Lakoff (1972), and Sadock (1974).

[17] Both Haley (1963) and Watzlawick (1967), for example, limit the term to messages which define the relationship between speaker and addressee.

[18] Notice incredible complexity of notation as discussed in Knapp (1972).

[19] See section in Bateson (1972) on the etiology of schizophrenia, and work of Haley, Laing, Ruesch, and Watzlawick.

[20] References in Pike (1967) Section 16.825.

[20a] Sapir (1951).

[21] See discussion in Ruesch and Bateson (1951).

[22] See Pike (1967) section 2. on etic vs. emic points of view. Rediscovered by G. Lakoff (1972).

[23] Some recent work is Deutsch (1974), Schegloff (1968), and Schegloff and Sacks (1972).

[24] Incidental side play is related to side sequences, Jefferson (1972).

[25] Potter (1970) is a collection of his previous works which were published separately.

[26] R. Lakoff (1972).

[27] See Laing's work and Piaget (1962).

[28] Wilden (1972) is overwhelmingly provocative.

[29] Watzlawick (1967) section 3.33 and references there.

[30] Berne (1961) and voluminous subsequent work.

[31] Lebra (1975) and references cited there.

[32] Goffman (1974), Chapter 10.

[33] A caveat is necessary here. Conventions change to catch up with creative uses of language and this particular example is no longer creative but is conventionalized.

[34] Bloch (1974) discusses this from a somewhat different perspective.

[35] A good discussion is in London and Rosenheran (1968) where they distinguish positive and negative abnormalities. A very suggestive way of thinking about deviance is outlined in Kirk and Talbot (1966).

[36] Laing (1960) on crazy cultures.

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# COMMENTS ON CHARLES PYLE, "PRAGMATICS"

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I was expecting Mr. Pyle to review some of the major research in the area of linguistic pragmatics; but for reasons that are not clear to me, that is a task which he dismissed as undoable. Instead, he has chosen to focus his and our attention on Gregory Bateson's notion of language as game play. I assume Mr. Pyle's purpose in choosing to discuss pragmatics in these terms, in the context of this particular symposium, was to communicate to us the fact that pragmatic knowledge--or, in his words, "the use of signs in the face-to-face interaction of organisms"--involves a highly complex system of socially agreed upon conventions or rules, much as in ordinary game-playing. Beyond that, I really don't have more to say about Mr. Pyle's paper.

For a speaker to know a language in the way that is studied in linguistic pragmatics is to know first of all when it is appropriate to speak, and to know what sorts of things it is then appropriate to say. In other words, it is knowing more than how to produce and how to understand utterances in the language; it is knowing how to use the language--how to produce appropriate utterances--in real-world situations. The very nature of pragmatic knowledge--the knowledge of language embedded in context--makes it something which is simultaneously easy for the speaker to acquire, and difficult for the linguist to describe.

There are at least two good reasons why bilingual educators ought to find out about pragmatic research, and why linguists working in pragmatics ought to take a look at what goes on in the bilingual classroom. The first is that bilingual programs bring children into contact with a new culture, a new language, and hence a new set of conventions for language use. The second reason is that those of the children who are acquiring a second language in these classrooms will be in the process of acquiring the pragmatic skills that make up part of the mastery of that language, and it may be important to learn what developmental stages can be observed in that process.

Regarding the first issue, the ease or difficulty children experience in adjusting to the new situation can be affected by the degree to which the new set of pragmatic rules differs from those they bring to school with them. I think it is fair to say that the culture represented in most bilingual classrooms in this country is North American, notwithstanding claims to the contrary and no matter what kinds of "cultural activities" may be imported into the daily program to give the impression of biculturality. At any rate, the conventions of language usage which prevail are those which are peculiar to the classroom context, no matter what language is being spoken.

A piece of research that I find particularly relevant to this issue is Susan Philips's study in which she examines the reasons why a group of English speaking Native American children were experiencing difficulty in comprehending and participating in verbal interaction in the classroom. The parents of the children in her study were Chinookan-English bilinguals living on the Warm Springs Indian Reservation in central Oregon. Although the children knew English, they were reluctant to speak in class and their participation in verbal activities declined as they progressed through school.

Philips found that although the children spoke English, they were operating by the pragmatic conventions of the Indian community, and these conventions were in direct conflict with the kind of verbal participation expected of them in the classroom. In the Indian community the individual was free to choose the degree of his own participation in a verbal event, and he was not expected to participate until he chose to do so. Further, individuals participated equally in the community's speech event, with no single individual controlling any such activity. Since access to participation was open to all members of the community, there was no distinction between performers and audience. At school, however, it was understood by teacher and students alike that all speech activities in the classroom were to be controlled by the teacher--that it was the teacher's role to decide who could talk, when and for how long that person could talk, what he could talk about, and whether or not what he said was acceptable. Such rules from the teacher's perspective were necessary for the maintenance of orderly instructional activities, of course. They permit her to maintain control while she checks to see whether her students understand the materials she wants them to learn. Thus, the public performances required of individuals on demand were taken as measures of her effectiveness as well as of the individual progress of the students. To the Indian students, however, such rules ran directly counter to their expectations, and consequently they were inhibited from participating. Thus, their progress and success in school was impeded by linguistic differences despite the fact that the children had no trouble speaking the school language.

Philips's work points to a need, I believe, to consider the rules of language use in bilingual classrooms against those which are held by the various speech communities represented in bilingual education programs. Information of this sort will not exactly enable bilingual programs to be more "bicultural" but it could certainly help bilingual educators to be more aware of the language needs of the children they are working with and to plan instructional activities more effectively for them. Perhaps there is research of this nature being carried out currently--but I don't know of any myself.

On this score, bilingual educators ought to know about the ongoing research in which Gumperz and Cook-Gumperz are engaged in describing language use in the classroom. The kind of close-up analysis of the structure of verbal interaction between teacher and student and between student and student offers valuable insights into the nature of the social conventions governing language use in the clasroom.

The foregoing discussion covers only one aspect of pragmatics. We can distinguish several kinds of pragmatic knowledge. We can, for example, distinguish specific from general pragmatic rules according to whether the rules govern the choice of particular linguistic forms or structures or whether they govern topics, occasions and meanings in general; and we can distinguish universal from local pragmatic rules, according to whether they are identified for language in general, or whether they can vary from one language community to another. One type of pragmatic knowledge, then, is both general and universal; an example is the set of conditions defining the prototypic case of, say, asking a question or giving a command

A second type, illustrated by the Philips study, can be described as general but local. Examples can be seen in culture-specific rules about who can ask questions of whom, under what conditions a person would choose to ask a question, whether asking a question can be an indirect way of doing something else, whether doing something else can be an indirect way of asking a question, and so on. These rules can be stated in general terms, but they may differ from one language community to the next. Ervin-Tripp's studies on indirection in American English request forms is a good example of research into this kind of pragmatic knowledge. A third type of pragmatic rule we can describe as specific and local. These will be the rules governing the choice of the actual forms used in greeting, cursing, concluding a sale, apologizing, and all the other acts for which a local speech community defines a restricted set of speech formulas.

This brings us to the second reason why bilingual educators and linguists working in pragmatics ought to get together--the acquisition of pragmatic knowledge seen as part of the process of learning a second language. The first thing to realize is that in general the need to acquire pragmatic knowledge does not constitute an additional complication in the task of learning a new language. Quite the contrary, for it appears, at least from my own research, that it is the pragmatic aspects of language--in particular the kind of pragmatic knowledge I have described as local and specific--which children are most sensitive to in the early stages of learninga second language, and it is this very system which provides the learner his first toe-hold in the language. In order to acquire a new language one must first be in a position to assume a role in situations and activities that make sense, and there must be adequate opportunity to participate in speech events despite the initial inability to speak the language. The situations which most clearly present such opportunities are those for which appropriate linguistic choices are defined pragmatically, as is the case with routinized or formulaic language.

I found that for children, play provides the perfect kind of situation for language learning, In play, language is not only highly predictable and clearly embedded in a meaningful and involving context, but it is also highly repetitions. Much of the verbal routines which children use in play is formulaic, consisting of expressions which can be learned and used whole, rather than being productively generated, and which, in the context of play, are better described in terms of their function in the play activity than in terms of their semantic structure.

The formulaic part of routines such as "wanna play", "me first", "my turn" and "get ready, get set, go!", involves highly specific knowledge of the appropriateness of each formula to a particular kind of setting or context. Fortunately, however, such language is fairly accessible and easy to learn. Since many of these formulas are frequently used, and since their contexts are generally current and obvious, the observant learner can determine easily what the appropriateness conditions are for a particular formula, or, putting it the other way around, what formula can be appropriately used in a particular kind of situation.

This kind of learning is facilitated by the learner's having many instances of the same expression; the learning of grammatical generalizations, on the other hand, depends on having many instances of expressions which are partly alike and partly different. Thus, although the descriptions of formulaic utterances--both with respect to their internal structure and their "appropriateness conditions"--will often be more complex than the descriptions of language generated by productive processes, this is a case where complexity to the grammarian and complexity for the learner do not coincide. Since speech formulas are highly routinzed or fixed, right down to prosodic patterns, the learner can acquire them as unanalyzed whole units, much as he acquires vocabulary items. By acquiring a variety of these formulas and by using them more or less appropriately the learner can insure his continuing participation in situations which will eventually permit him to gain control over the new language. For children learning a second language, to pick up expressions imitatively and to use them liberally in the early stages appears to be an obvious and natural first step in figuring out the new language.

There may, however, be both individual and cultural obstacles to making use of this obvious device for language learning.Adults will find fewer opportunities for interacting in this way than do children. Individuals may lack the necessary social skills to try to interact with people with whom they share no common language at first. The bilingual classroom teacher needs to be sensitive to these differences and to plan activities which will maximize the opportunities of all to get started learning the new language.

I should like to make clear that play activities can provide an ideal context for the beginning stages of language learning in a bilingual classroom, with native speakers of the target language participating in the games, but not necessarily in a standard second-language instructional classroom. The point is that the continuing interaction in a meaningful activity will natural provide new contexts for new material in the target language. This new material will be learnable and memorable by virtue of being embedded in a current and interest-holding activity over which the learner has already acquired some mastery and within which he has already received some social rewards. That kind of opportunity would certainly not arise in a setting in which, say, Cantonese children were taught to play pinochle, in English, with each other.